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AMERICAN JOURNAL OF OPHTHALMOLOGY

VOLUME 18 MARCH, 1935 NUMBER 3

PSEUDOXANTHOMA ELASTICUM AND ANGIOID STREAKS

WILLIAM L. BENEDICT, M.D.
AND
HAMILTON MONTGOMERY, M.D.
ROCHESTER, MINNESOTA

The authors report eight cases of pseudoxanthoma elasticum, in five of which ophthalmologic studies were made. Two of these showed angioid streaks, in the remaining three the choroid was diseased. Histopathologically, the skin condition is differentiable for diagnosis. The occurrence in association with the ophthalmic picture is frequent, but each may appear without the other. The etiology is still hidden, but the authors' belief is that there are degenerative changes of the elastic tissue due to malformation, based on heredity. Treatment is without success. Whereas the skin condition is harmless, except cosmetically, the ophthalmic involvement offers a more serious prognosis. From the Sections on Ophthalmology and Dermatology and Syphilology, The Mayo Clinic.

The rare skin disease known as "pseudoxanthoma elasticum" was given this name by Darier in 1896. The term "angioid streaks" was first employed by Knapp in 1892. It was not until 1929 that Gröndblad first definitely associated the two diseases. Klien, quoted by Nomland and Klien in 1933 and 1934, stated that in nineteen of the twenty-one cases of angioid streaks reported in the last two years, cutaneous lesions of pseudoxanthoma elasticum[11] were associated. Lewis and Clayton stated that no case of the latter disease has been reported as occurring alone since 1929. The older literature on pseudoxanthoma elasticum has been summarized by Thorne and Goodman. A few of the older cases[3] were probably not examples of pseudoxanthoma elasticum but simply of senile cutaneous change (senile elastosis). Between sixty-five and seventy-five cases of angioid streaks have been reported in the literature to date, and probably a similar number of cases of pseudoxanthoma elasticum.

To this group we wish to add reports of eight cases of pseudoxanthoma elasticum which have been encountered at The Mayo Clinic, in six of which histopathologic studies were made. Also we wish to give reports of studies of material sent in, representing two other cases. Only five of our eight patients underwent ophthalmologic examination, and only two of these five patients presented typical angioid streaks. Because of the rarity of both conditions, reports of cases are given briefly. The histopathologic changes were so similar and characteristic that they will be described together, rather than in each case separately.

Reports of cases

Case 1. An American, aged forty years, was examined in the clinic in February, 1934, because of extensive choroiditis which had markedly impaired vision. He had worn glasses since the age of eighteen years, because of myopia. In November, 1928, he suddenly had lost useful vision of his right eye, the result of hemorrhage. In July, 1933, vision of the left eye had become somewhat blurred, and since November, 1933, he had been unable to read. His tonsils had been removed, and operations on his accessory nasal sinuses had been advised.

In the Section on Ophthalmology, at the clinic, vision of the right eye was found to be reduced to the ability to count fingers at 1 meter; vision of the left eye was 6/60, with correction for compound myopic astigmatism. External examination of the eyes gave negative results. Studies of visual fields gave evidence of bilateral central scotoma, more marked in the right. In the fundi were many remnants of old hemorrhages, and proliferation of pigment from previous inflammatory lesions. In the right eye there was extensive macular involvement, with fresh hemorrhages signifying recent activity. The left eye, also, gave evidence of macular involvement, with recent hemorrhages, but the lesions were not so extensive as those of the

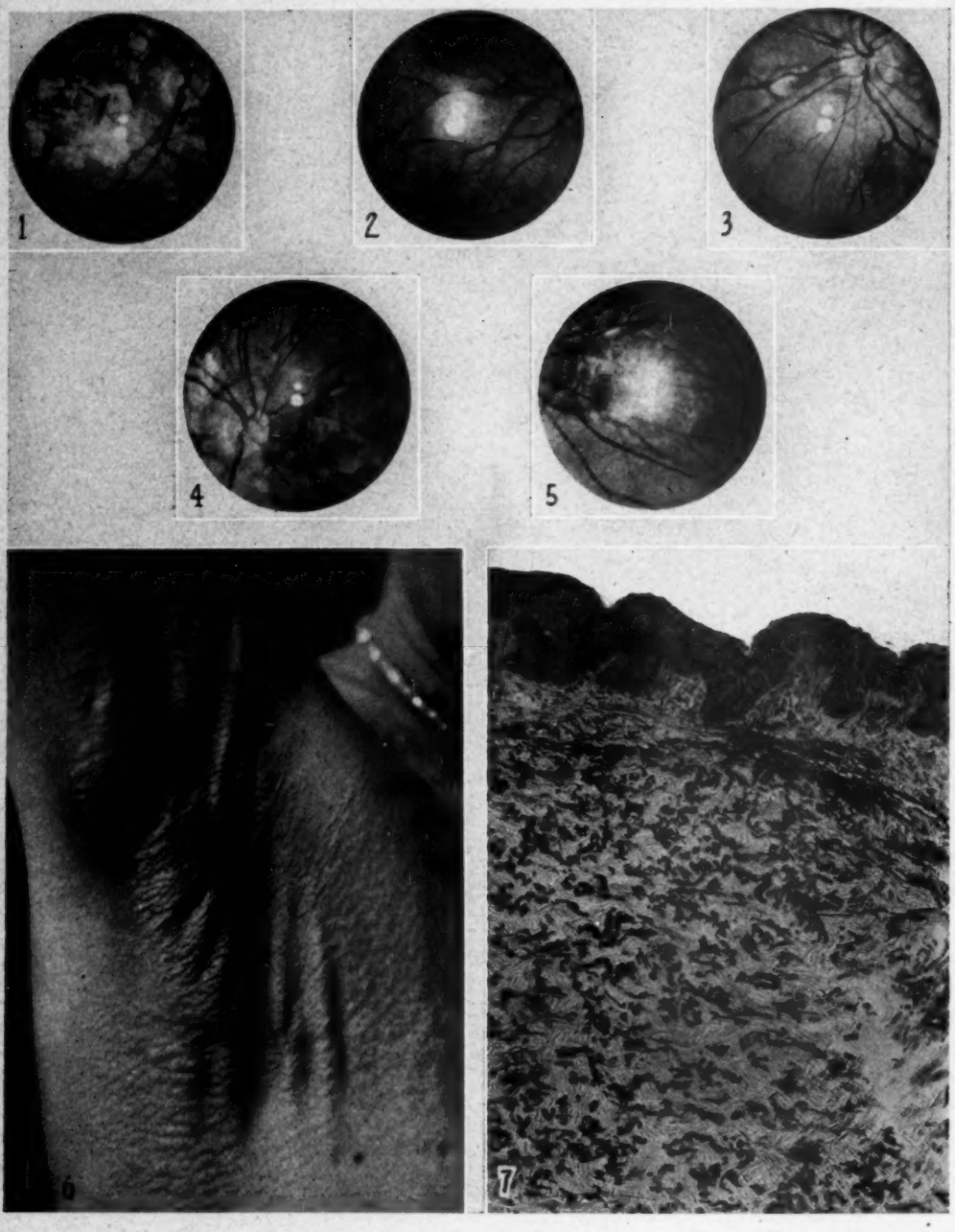

Fig. 1 (Benedict and Montgomery). Macular region and disc of right eye (case 1). From the dark ring about the disc a broad, bandlike streak leads through the swollen mass in the macular region and extends downward and temporalward, where it fades out.

Fig. 2 (Benedict and Montgomery). The broad, angioid streak shown in figure 1 is here seen to fade out in the lower temporal quadrant.

Fig. 3 (Benedict and Montgomery). Left eye (case 1), showing the ring about the disc, from which angioid streaks radiate in all directions. A wide streak from the disc divides and surrounds a patch of atrophic choroid and proceeds as two streaks. Below the bifurcation of the inferior vein is shown a recent choroidal hemorrhage. The streaks, as well as the retinal veins, can be seen traversing this area.

right eye. In both eyes could be seen the typical, reddish-brown ring encircling the disc, and projecting outward radially from this ring, the irregular angioid streaks (figs. 1 to 5). Because of the angioid streaks the patient was referred to the Section on Dermatology.

Ever since puberty, the patient had noticed wrinkling of the neck, and a change in the texture of the skin. Lesions subsequently developed in the axilla, groin, and to a lesser extent on the flexual surfaces of the elbows and knees, and there were a few on the glans penis. Examination revealed discrete, soft, barely palpable, chamois-yellow nodules, 0.25 to 1 cm. in diameter, in the areas just mentioned. Some of the nodules were in linear arrangement, and there was some tendency toward coalescence, but without definite formation of plaques. The skin of the axilla, neck, and groin was loose, and was thrown into folds. Lesions were not evident on the face or mucous membranes. There was no family history of similar skin trouble, although the patient's mother had some type of trouble with the eyes. The values for blood cholesterol, fatty acids, and lipids were within normal limits. The histopathologic picture of a specimen from the axilla was typical of pseudoxanthoma elasticum.

Case 2. A physician, aged forty-two years, underwent examination of the ocular fundi in the course of routine physical examination in 1928, and at that time was found to have typical angioid streaks. Choroidal degeneration was present, but visual disturbances as yet had not been noted. When the patient was examined in February, 1934, he was unaware of any cutaneous lesions, but dermatologic examination revealed typical lemon-yellow papules and plaques 0.1 to 0.5 cm. in diameter, in the anterior and posterior portions of both axillae. There were no lesions elsewhere, nor was any history of similar trouble elicited in the family.

Case 3. A southern woman, forty-one years of age, was examined in the clinic in July, 1933, because of cutaneous lesions which had started, at the age of twelve years, as yellowish-white nodules just beneath the skin of the neck. These had spread, involving the flexural surfaces and the groin. One sister, aged fifty years, had similar trouble. Four other members of the family did not have the condition. Treatment with radium, eight or ten years previously, had resulted in scarring of some regions and mild actinodermatitis. Blood chemical studies gave evidence of slight increase in the lipids, per 100 c.c., as follows: cholesterol 228 mg. (normal 165 to 200 mg.), fatty acids 416 mg. (normal 335 to 350 mg.), and total lipoids 644 mg. (normal 500 to 550 mg.). The clinical picture and biopsy were typical of pseudoxanthoma elasticum. In the ophthalmologic report, Dr. Wagener said that certainly the classical angioid streaks were not present, but rather an unusually delineated and distributed choroidal lesion which in places followed the choroidal vascular distribution. It seemed to be more definitely postinflammatory than the usually seen angioid streaks. The vision was, right eye, 6/60; left eye, 6/15. General examination otherwise gave negative results.

Case 4. The sister of the patient represented in case 3 had similar and even more extensive lesions and presented similar ocular changes. Angioid streaks were especially searched for in both cases 3 and 4. The patient did not register in the clinic nor undergo general examination.

Case 5. A Norwegian married woman, thirty-five years of age, was examined in the clinic August 24, 1931, because of backache. General physical examination revealed sacroiliac backache, dental infection, and migraine. The skin trouble had begun with thickening and loss of elasticity, and development of a yellowish hue. It had started in the axillae (fig. 6); then it had been noticed about the neck, and finally had spread to the thorax, abdomen, perineum, labia, anus, thighs, legs, and, lastly, the ankles. The patient had received ten to fifteen roentgenologic treatments twelve years before, without benefit. Her mother had died of pemphigus. The patient also had had eczema on the hands for two winters. Examination of the fundus disclosed: guttate choroidal degeneration, and an old patch of choroiditis with pigmentation in the lower nasal quadrant of the left eye. The patient was also found to have compound hyperopic astigmatism. The vision was, right eye, 6/6; left eye, 6/7.

Case 6. A Ukrainian girl, nineteen years of age, was examined in the clinic in February, 1928, and was found to have latent syphilis, exophthalmic goiter with a basal metabolic rate of +24 percent, and infected tonsils. Dermatologic examination revealed keratoderma punctata, not syphilitic in type, of the palms and soles, and what later we came to know as typical lesions of pseudoxanthoma

Fig. 4 (Benedict and Montgomery). Left eye (case 1), showing disc, macular region, and superior temporal portion of the fundus.

Fig. 5 (Benedict and Montgomery). Left eye (case 1), showing macular region and distribution of angioid streaks in relation to pathologic change in the choroid.

Fig. 6 (Benedict and Montgomery). Typical picture of pseudoxanthoma elasticum. Discrete papules as well as laxness of skin are noticeable.

Fig. 7 (Benedict and Montgomery). Pseudoxanthoma elasticum. Elastin stain. Normal elastic fibers are seen between the epidermis and the pathologic portion, where fibers are edematous, frayed, splintered, and clumped. Also, granular degeneration is present.

elasticum involving the neck, axillae, and shoulders. The family history was not obtained. This was the first case seen at the clinic, and diagnosis was not established until the specimen for biopsy had been studied. The histopathologic picture was typical and diagnostic (fig. 7).

Case 7. A Greek laborer, aged forty-eight years, came to the clinic in October, 1933, to determine whether he had syphilis, but results were negative. In 1932 he had first noticed yellowish lesions developing about the belt line, but not entirely limited to this area. He attributed these lesions to wearing of a wide belt during childhood. The belt had been drawn very tightly and had pinched his waist. Neither ocular examination nor blood chemical studies were made, and the family history was not examined. Clinical and histopathologic pictures were typical of pseudoxanthoma elasticum.

Case 8. A child, aged three years, was examined in the clinic in June, 1933, because of trouble with the skin. General examination gave essentially negative results. There was no history of similar disease in the family. When the child was eighteen months of age an abnormal condition of the skin had begun on the inner aspect of the right thigh, and the disease gradually had spread so that a small area on the front of the left thigh and abdomen also had become involved. In these areas, there were ill-defined papules or nodules which were the color of the skin, or, in some instances, were slightly yellowish. There was a suggestion of atrophy in some of the lesions. The clinical picture was not typical of pseudoxanthoma elasticum. Colloid and amyloid degeneration, and even the possibility of scleroderma, were considered. A specimen taken for biopsy enabled us to make a definite diagnosis of pseudoxanthoma elasticum, although the changes in the elastic tissue were in an early stage, and were not so marked as in the other cases.

Clinical features

The clinical appearance of lesions of pseudoxanthoma elasticum is brought out well in figure 6, and the distribution is discussed in detail in recent articles in the literature[11, 16]. The lesions usually develop as asymptomatic, discrete, chamois-yellow to orange papules or nodules, later assuming linear arrangement or merging to form plaques. The flexural folds of the skin soon become lax and stretched. The disease usually starts on the neck or in the axillae and then spreads to other parts of the body but there are exceptions to this (cases 7 and 8). The occasional involvement of mucous membrane, and Balzer's case, wherein at postmortem examination changes were found in the elastic tissue of the heart, similar to those seen in the skin, would emphasize the systemic nature of the disease. The disease may start in infancy, usually by the time of puberty, but occasionally not until later adult life. Spontaneous involution of some of the lesions occurred only in Kissmeyer and With's case, possibly the consequence of stretching of the skin in pregnancy. No successful method of treatment is known. Roentgen rays have been recommended, but these were valueless in two of our cases. Fibrolysin, and mild ointments, with massage, also have been employed.

In this series, of the five cases of pseudoxanthoma elasticum in which ophthalmologic examination was performed, in only two (cases 1 and 2) were typical angioid streaks found. In cases 3, 4, and 5 there were rather extensive cutaneous lesions of pseudoxanthoma elasticum, and yet angioid streaks were not demonstrable, although there was evidence of postinflammatory lesions of the choroid in two cases and a degenerative change in the choroid in one case. In contrast, the patient in case 2, a physician, never had noticed his cutaneous lesions, probably because they were early and slight, and yet he presented a definite picture of angioid streaks. It is problematic whether the evidence of disease of the choroid in cases 3, 4, and 5 will eventuate in angioid streaks. One of us (Montgomery) made definite histopathologic diagnosis of pseudoxanthoma elasticum in two cases in which sections were sent, one by Dr. R. Nomland and one by Dr. J. R. Rogin, for diagnosis. Nomland's patient had typical angioid streaks but of Rogin's patient ophthalmologic examination was completely negative. Furthermore, several patients were seen at the clinic who presented angioid streaks but on examination of whom cutaneous disease could not be demonstrated. Of the cases in which the eyes were examined, including Nomland's and Rogin's cases, only three of seven, or 40 percent of this series of patients, had both pseudoxanthoma elasticum and angioid streaks. This does not

fail to take account of the fact that in only one of seven proved cases of pseudoxanthoma elasticum was the fundus normal.

Histology of pseudoxanthoma elasticum

The histopathologic changes in pseudoxanthoma elasticum, are, we believe, typical and diagnostic of the disease. These consist, fundamentally, in degenerative changes in the elastic tissue in the middle and deeper portions of the cutis, either diffuse or in circumscribed nodules. The epidermis and upper portions of the cutis remain unchanged. Thus, there is a normal zone of connective and elastic tissue between the epidermis and the portion which has undergone pathologic change. In the elastic tissue, first, there is edema and swelling of the elastic fibers; then, fragmentation and splitting of the fibers, so that at times they occur in bundles or clumps. Shortly one sees tinctorial changes, the elastic fibers tending to stain with hematoxylin, or to assume a bluish color with methylene blue. In a later and characteristic stage, in the center of the lesion is seen, also, curling of the fibers and granular and vacuolar degeneration of varying degree, even simulating mycelial threads or chains of bacilli, for only the walls of the fibers may be preserved. Changes in the connective tissue in the regions where there was degeneration of elastic tissue were minimal in all eight cases in which pathologic changes were studied (six cases of ours, and Nomland's and Rogin's cases) and consisted, at most, in edema and a tendency to homogenization of some of the collagen fibers. In case 8, that of a child aged three years, the collagen bundles had a wavy character, probably normal for the age. No merging of connective and elastic-tissue fibers was seen, except in case 7, and even here there was a grenz (border) zone between the changes of senile (traumatic) skin and the region of typical pseudoxanthoma elasticum. In all eight cases, there was lack of, or at most a slight degree of, inflammatory change. An occasional blood vessel in the pathologic portion had undergone slight dilatation or proliferation of the endothelium, with or without slight perivascular infiltration of a few lymphocytes, plasma cells, and an occasional fixed connective-tissue cell and mast cell. The elastica of the vascular walls remained intact. The dermal appendages were not involved. There was a suggestion of early calcification of some of the elastic fibers in one case. Traces of mucin about the blood vessels were seen only in case 6, in which hyperthyroidism probably was associated. In this case there was also early formation of scar tissue at the margins of portions where degeneration of elastic tissue had taken place, together with a few newly formed, thin, fine, elastic-tissue fibers, such as have been described for striae distensae. The patient, however, had had a recent syphilitic infection and the scarring might have resulted simply from involution of a cutaneous syphilid. In four of the cases, stains for fats and lipids gave negative results. There were no evidences of any change of cutaneous nerves in any of the sections. In one case a few giant cells, endothelial in type, were seen, possibly representing a foreign-body reaction to the degenerating elastic fibers.

Differential diagnosis of pseudoxanthoma elasticum

Pseudoxanthoma elasticum is readily distinguished from colloid degeneration of the skin, including colloid milium, and from amyloidosis of the skin, usually by the different distribution of lesions[16] and by their entirely different histopathologic appearance. Cutis laxa (cutis rhomboidica nuchae) need only be mentioned. The disease has nothing to do with xanthoma, although the small papular, or so-called diabetic type of xanthoma clinically may simulate pseudoxanthoma elasticum, in appearance and distribution of the lesions[2]. No xanthoma cells are demonstrable. Stains for fat and lipids were negative in four of our cases, and detailed blood chemical studies gave negative results in two. This is also true of cases in the literature in which similar investigations have been made, ex-

cept Ohno's cases, in which fatty degeneration of the elastic fibers and deposits of calcium were found. We believe that pseudoxanthoma elasticum can be definitely distinguished histologically from senile cutaneous changes (senile elastosis). Weidman, however, has stated that "histologic observations per se do not form an adequate basis for a differential diagnosis between pseudoxanthoma elasticum and senile elastosis." Jones, Alden, and Bishop have expressed the belief that histopathologic processes in the two conditions are similar and indistinguishable from each other. Kissmeyer and With went even further, writing that degeneration of elastic tissue, in scars and striae distensae, and in various granulomas, is similar to that in pseudoxanthoma elasticum and senile elastosis; merely the degree of degeneration varies. Clinically, the weather-beaten skin of the sailor or farmer may simulate the looseness and folds seen in pseudoxanthoma elasticum, but without evidence of the discrete, chamois-yellow papules and plaques. Pathologically, in senile skin are marked degenerative changes in the collagen as well as in the elastic fibers, a bluish staining of both with hematoxylin or polychrome methylene blue, and a merging of the two to form homogeneous masses; the papillary bodies are usually involved in the process, and there is atrophy of the epidermis and often of the cutis. It is evident that if a specimen for biopsy is taken from the neck of an elderly patient who has pseudoxanthoma elasticum, it will probably show evidence of senile skin also.

The lack of appreciable inflammatory changes readily allows pseudoxanthoma elasticum to be distinguished from degenerative changes in the elastic tissue, such as are seen in granulomas or in scar tissue. In striae distensae, usually there are fine, thin, probably newly formed elastic fibers that are trying to bridge the gap between the broken, curled fibers at either side. We are not concerned here with the pure histologic and theoretic aspect of the possible common origin of elastic and connective-tissue fibers[12], but with the fact that on the basis of biopsy, pseudoxanthoma elasticum can be distinguished from other diseases in which degeneration of elastic tissue occurs.

Finally, rare cases are reported in the literature, which do not permit of accurate classification. Many of the lesions in Harper's case, for example, clinically resembled lesions in pseudoxanthoma elasticum; yet histologic examination revealed marked changes in connective tissue, whereas the elastic tissue was diminished, although frayed and splintered. The case of juvenile elastoma reported by Weidman, Anderson, and Ayers resembled in many respects our case 8, and may represent an early stage of pseudoxanthoma elasticum.

Etiology and relationship of pseudoxanthoma elasticum and angioid streaks

Many theories have been offered in explanation of each disorder, and attempts have been made to correlate the two conditions on a common pathologic basis. In spite of Verhoeff's observations, adequate pathologic studies have yet to be made regarding angioid streaks, and their results are necessary before a definite statement regarding etiology can be made. In regard to pseudoxanthoma elasticum, we cannot subscribe to Weidman's concept that fatty degeneration of elastic tissue takes place, except that it may take place as a secondary phenomenon occurring in only a few cases. Neither can we accept the theory that disturbance in calcium metabolism is the cause of the condition. We have already given evidence against there being a relationship between pseudoxanthoma elasticum and senile elastosis, although Jones, Alden, and Bishop have expressed the belief that a relationship exists. Our experience does not agree with that of Juliusberg[9] and Artz that, in some cases of pseudoxanthoma elasticum, proliferative changes in the elastic tissue progress to the point of formation of tumor, and therefore should be designated as elastoma. Rather, we believe that, in both senile elastosis and pseudoxanthoma elasticum, degenera-

tive rather than proliferative changes take place in the elastic tissue, and that the apparent increase is due to swelling, tragmentation, and splitting of fibers. Goodman and Thorne have suggested the factor of degeneration of nerve elements, but no changes in the cutaneous nerves were demonstrable in our cases. The relative lack of inflammatory reaction would tend to rule out consideration of inflammation or infection as etiologic factors; thus, syphilis and tuberculosis are excluded, although the disease has been attributed to both, on inadequate grounds. The presence of infiltrate and giant cells in some cases can more easily be explained on the basis of a foreign-body reaction, the degenerating elastic fibers acting as the foreign body. Trauma may have been a contributing factor in case 7, but does not satisfactorily explain the picture as a whole. The theory of Ebert, that degeneration of the elastic tissue, caused by a toxic agent of infectious or endocrine origin (specific elastotoxins of Jadassohn), explains striae distensae, would be equally applicable to pseudoxanthoma elasticum, and would permit correlation of this condition with angioid streaks. This theory, however, remains to be proved. We would prefer to explain pseudoxanthoma on the following basis: Absence of an inflammatory reaction, together with the history, obtained in many cases, of more than one member of the family having the disease, makes it seem more likely that the condition is a malformation (Missbildung) of elastic tissue and is probably on a hereditary basis[9, 18].

Gröndblad would attribute the angioid streaks in the retina to degenerative changes in the elastic membrane of the choroid, allowing the vessels to be seen through the break, and thus linking the two conditions together on a common etiologic basis. Lewis and Clayton, and Klien, among others, have expressed themselves as being in support of this view. Except for the sclera, elastic tissue in the eye is found only in the lamina vitrea, or Bruch's membrane, of the choroid. This is a very thin layer, which separates the pigment epithelium of the retina from the choriocapillaris of the choroid. It is really composed of two parts: the inner or cuticular layer is secreted by the retinal epithelium, is really a part of that organ, and is ectodermal in origin; the outer or choroidal layer is composed of elastic tissue and is of mesodermal origin. Hence, this outer layer is regarded as a possible site of pathologic change. Clay expressed the belief that angioid streaks were due to thrombosis of the posterior ciliary vessels. Three of our patients had disease of the choroid, without angioid streaks. This may be a coincidental finding, for angioid streaks usually have preceded the development of hemorrhages or choroiditis. Furthermore, in the three cases in which disease of the choroid, without angioid streaks, was present, the changes in the skin were extensive and marked. The etiology must, for the present, remain unknown.

Summary and Conclusions

1. Eight cases of pseudoxanthoma elasticum are reported including reports of ophthalmologic studies in five.

2. Only two of the five patients had typical angioid streaks; the other three, however, had disease of the choroid.

3. The histopathologic picture of pseudoxanthoma elasticum is usually typical and diagnostic. It is not to be confused with the histopathologic picture of senile skin (senile elastosis).

4. Pseudoxanthoma elasticum and angioid streaks are usually associated, and present a definite syndrome; frequently, however, they occur independently of each other.

5. The etiology of both remains unknown, although the most plausible explanation is that both results from degenerative changes of the elastic tissue as the result of a malformation (Missbildung), and are on a hereditary basis.

6. A satisfactory method of treatment for either condition is not known.

7. Pseudoxanthoma elasticum is harmless except for the cosmetic disfigurement, whereas angioid streaks are frequently followed or associated with varying degrees of choroiditis, and thus offer a more serious prognosis.

The Mayo Clinic.

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HEREDITARY CONGENITAL PTOSIS

Report of a Pedigree and Review of the Literature

FRANK H. RODIN, M.D.
AND
HANS BARKAN, M.D.
SAN FRANCISCO

Similar ocular defects in a mother and two children are described. There had been no previous history of a like muscle condition in either the father's or the mother's family. The literature on hereditary ptosis was studied by the authors who make the following classification of the anomalies found: 1. hereditary congenital ptosis, 2. hereditary ptosis with external ophthalmoplegia, 3. hereditary noncongenital ptosis, and 4. hereditary ptosis with epicanthus. From the Division of Ophthalmology, Stanford University Medical School.

The part played by heredity in the production of abnormalities of the eyes is still obscure.

The finding of two children and mother with ptosis and other eye-muscle anomalies (fig. 1) justifies its reporting.

Mrs. F. H., aged 29 years, was seen by Dr. Wilmer on January 24, 1910, when she was seven years of age. The following is a report from Dr. Wilmer's records (personal communication to F. H. R.):

"There was a partial bilateral oculomotor paralysis. She held her head naturally thrown back at an angle of forty-five degrees. The motion of the right eye was very deficient. There was a slight upward movement of the right eye. The motion of the left eye was also deficient. There was marked drooping of both lids. When the patient tried to close the lids, the right eye diverged and the left eye converged. In trying to elevate the globe, both eyes converged. The right eye showed an abduction of 5½; adduction of 5. There were no movements up and down in the vertical plane. The left eye showed an abduction of 2½; adduction of 2½. The motion of the right eye was entirely along a horizontal plane; that of the left eye, down and in. On looking naturally the reflex of the right eye was 2 mm. below the margin; the left eye, 1½ mm. The vision was: right eye, 20/40, with +2.00 cyl. axis 60° = 20/30; left, 20/100, with +2.00 cyl. axis 90° = 20/50. With the right eye she read Jaeger 1, at 6 inches; left, Jaeger 12, at 4 inches.

"On November 16, 1910, three millimeters of skin and cartilage were removed from the upper lids and a double advancement of the superior recti muscles was performed. When she was seen on October 11, 1911, there was definite improvement of both eyes."

Fig. 1 (Rodin and Barkan). Photograph showing the ptosis of the mother and the two children, their heads naturally tilted backward. The dark shadows seen under the chin are caused by the tilting of the head. The child on the left is resting her head on her mother's shoulder. Normally, this child does not tilt her head sidewise.

Mother.—When we examined the mother, the findings were as follows: When she held her head naturally, there was a tilt backward at an angle of fifteen degrees. There was a fine horizontal nystagmus. The margin of the upper lids reached the upper margin of the pupils. When closing the eyes there was no movement of the upper lids. The lower lids came up and

there was a horizontal movement of the lids nasally, the skin forming fine vertical folds at the inner half of the lids. The lids of the right eye covered the eyeball fully, while the lids of the left did not, leaving a narrow slit of sclera exposed.

There was no movement of the eyes upward. The right eye abducted to the maximum; there was very little adduction. The left eye abducted 20 degrees,

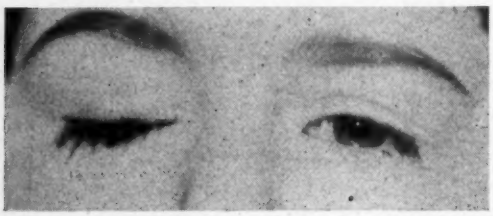

Fig. 2 (Rodin and Barkan). Photograph of the younger child. Note the complete ptosis of the upper right lid.

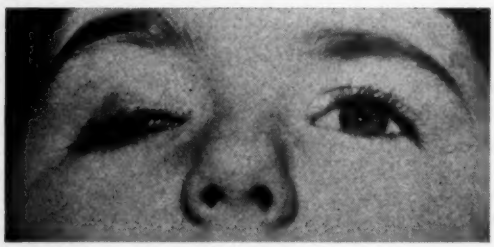

Fig. 3 (Rodin and Barkan.) Improvement obtained after a Hess operation. Note the marked external strabismus of the right eye.

as measured by the perimeter arc; it adducted 15 degrees.

There was no history of any ptosis in her own or in her husband's family.

First Child.—The older child was a girl, aged 5 years. The mother had noticed the tilting of the head soon after birth; now it tilted backward at an angle of 15 degrees.

The upper lids drooped moderately, their borders reaching the upper margin of the pupils. There was no movement of the eyes upward. There was a fine rotary nystagmus. The right eye had a good abduction, whereas adduction was limited to 25 degrees beyond midline. The left eye showed some limitation to the abduction but the adduction was normal.

The left eye showed an external strabismus of 25 degrees, as measured by the perimeter arc.

Second Child.—The younger child was a girl, aged 4 years (fig. 2). The mother had noticed the ptosis soon after birth.

There was a slight tilting of the head backward. The right upper lid covered all of the eyeball; the cornea could not be seen unless the upper lid was raised. The left upper lid was drooped moderately. There was a fine rotary nystagmus. There was no movement of the eyes upward. The right eye showed an external strabismus of 35 degrees with good abduction. There was no movement of the right eye nasally beyond midline. The left eye showed no abduction beyond the midline but the adduction was normal.

The fundi revealed normal discs and retinas. The occipitofrontalis muscle showed poor contraction.

A Hess operation on the upper right eyelid was done (H. B.). A fair result was obtained (fig. 3).

Discussion

The multiplicity of eye-muscle anomalies found in one individual can be best explained if we consider the embryology of these muscles. According to Mann[1]: "The eye muscles in man seem, at their earliest stage, to be represented by a single undifferentiated mass. The earliest trace of these muscles in man can be seen at 7 mm. when they are represented by a massed condensation in the paraxial mesoderm surrounding the optic vesicle. There is at first no separation between individual muscle condensations. The distinction occurs fairly quickly. The four recti and the two obliques can be recognized before the 20-mm. stage. The separation is first apparent at their insertions and gradually spreads proximally towards their origins. At 20 mm., the levator palpebrae superioris is not yet to be found. It arises soon after this stage by a separation of some of the fibers of the medial border of the superior rectus, so that at first it can be found lying to the inner side of that muscle and not above it (Henkel). This

is the case at the 60-mm. stage. It increases in size, however, once it has separated from the superior rectus, and starts to grow laterally on a slightly higher plane, so that, at the 75-mm. stage, it overlaps the inner edge of the superior rectus. This lateral growth continues until the fourth month, when the muscle has reached its final position.... The comparatively late appearance of the levator is of clinical interest when it is realized that it may entirely fail to separate from the superior rectus (which in these cases may itself be defective), thus leading to a condition of congenital ptosis with or without defective power of upward movement of the globe."

Although according to the mother there is no history of any eye-muscle disturbance in her family, the fact that she and also her two children show eye-muscle anomalies, would suggest that this is a definite manifestation of heredity.

It is interesting to note that after marriage she consulted a number of ophthalmologists in reference to the question of her eye condition being hereditary and the possibility of its transmission to her children. Those she consulted were of the opinion that since there had been no history of any eye abnormalities in her family, the probability of an eye defect in her children was very remote, and it was more than likely that her own defect had been due to chance.

After the birth of her first child, who had various eye-muscle abnormalities, she again consulted ophthalmologists as to the advisability of having other children. She was told that it was difficult to prophesy whether the second child would have normal eyes or not.

Review of the Literature

No review of hereditary ptosis seems to have appeared in the medical literature, classifying the various types that have been observed. This review does not claim to be exhaustive of the subject. However, all available literature has been examined. No attempt will be made to discuss the hereditary factors which explain and govern the transmission of the defects found, nor will the operative procedure of ptosis be considered.

Although hereditary ptosis has been recognized for many years and no doubt was known to the early medical writers, it was only during the last one hundred years, especially during the last fifty years, that family trees with this condition have been reported. Recently the eugenists have carefully studied such pedigrees and the hereditary factors underlying this anomaly.

Hereditary blepharophimosis has been reported in which the outstanding sign was a narrow palpebral fissure. Although etymologically blepharophimosis is a contraction of a lid, the accepted definition in the medical textbooks and medical dictionaries is an abnormal narrowing of the palpebral fissure. Blepharoplegia is paralysis of a lid and blepharoptosis is drooping of an upper lid. However, ptosis is the accepted term used when referring to the drooping of the upper lid. Blepharophimosis is not a true type of ptosis, as is illustrated in the pedigree described by Dimitry[62].

Hereditary ptosis may roughly be divided into four definite types:

1. Hereditary congenital ptosis.
2. Hereditary ptosis with external ophthalmoplegia.
3. Hereditary noncongenital ptosis.
4. Hereditary ptosis with epicanthus.

Hereditary congenital ptosis

Hereditary congenital ptosis is probably by far the most common. The ptosis, which is observed at birth, remains the same throughout life and it is very rarely that the condition becomes worse later in life. It is usually bilateral and, with a few exceptions, accompanied by some defect or defects in the motility of the eyes. The ptosis may vary from a mild form to such a degree that the lids completely cover the pupils. Impairment of the function of the superior-rectus muscle is the most common, and paralysis of or limitation in the movements of one or more extrinsic eye muscles may also occur. Where there is interference with or limitation of ad-

duction, the eyes are often divergent. As a rule vision is not impaired. The fundi usually show normal discs and retinas. Nystagmus may be present.

Individuals with ptosis have a certain characteristic appearance depending primarily on the degree of ptosis: The forehead is wrinkled; where the ptosis is marked, deep horizontal furrows traverse the forehead. The eyebrows are drawn upward. The wrinkling of the forehead and the drawing up of the eyebrows are due to the marked contraction of the occipitofrontalis muscle. The skin of the lids is smooth and thin, and retracted below the upper rim of the orbit. The palpebral fissure is narrower and may be reduced to a fine slit. To compensate for the covering of the pupils by the lids an affected person tilts his head backward so that the pupils may become uncovered. This tilting may be very marked in advanced cases. Occasionally fingers or forceps are used to raise the lids. These patients as a rule show no other abnormalities.

Briggs[2] reported six generations with ptosis, covering a period of one-and-one-half centuries. Inheritance was direct in every case, no generation in the lineage of the affected being skipped, except in one instance—in the sixth generation.

Twenty-three families were represented, in seventeen of which the father and in six the mother transmitted the defect. Of the 128 members of the genealogy composing the twenty-three affected families, sixty-four had the ptosis and sixty-four were normal; seventy-four were males, fifty-three females, and one of unknown sex. Of the affected, thirty-three were males, thirty were females, and one of unknown sex; while of the normal, forty-one were males and twenty-three females. There was only one case of intermarriage, between second cousins, and of the offsprings, which were males, one was affected and the other had normal eyes.

A typical description of the condition is that of a male, aged 51 years, in good health who had bilateral ptosis, but no evidence of physical or mental degeneration. The forehead was greatly wrinkled, especially on the right side. The eyebrows were higher than is normally seen. The upper lids showed no wrinkles and covered the upper part of the pupils, necessitating constant action of the occipitofrontalis muscle, and tilting of the head backward, in order to fix objects above the horizon. The patient was able to superduct the eyes, but this to only a limited degree. There was no other extraocular-muscle impairment nor imbalance; the pupillary reactions were normal. When the thumbs were pressed firmly against the eyebrows, so as to prevent the associated action of the occipitofrontalis, he was unable to raise the lids, showing total impairment of the levators. The vision of each eye was normal, with the proper correction.

Forsberg[3] reported twelve cases of hereditary ptosis in five generations comprising a family tree of sixty-seven individuals. Six were males and six females, the sex of the thirteenth was not known. The condition was transmitted through both sexes.

Heuck[4] described hereditary ptosis in a mother, two sons, and one daughter, in which the eyes were directed downward and converged easily. There was complete loss of function of the superior and inferior recti, while the other muscles functioned normally. There were also visual defects.

Horner[5] reported hereditary ptosis in three generations of one family, associated with impairment of the superior rectus, so that raising of the eyes was impossible. He also described another family in which nine persons were affected with ptosis.

Daguillon[6] reported hereditary ptosis with divergent strabismus, congenital myopia, and amblyopia.

Münden[7] reported a woman with ptosis which came on while crossing a river in a boat. The boat turned over, and in her fright she closed her eyes tightly; when rescued she had bilateral ptosis, which she retained during life. At the time of the accident she was pregnant and the daughter who was born subsequently also had bilateral ptosis. This daughter had two normal children and a boy with bilateral pto-

sis. This son had one child who also had ptosis.

Addario La Ferla[8] described hereditary ptosis in three successive generations. His patient was a girl, aged 15 years, who had complete ptosis. Her paternal grandfather had also had complete bilateral ptosis, while her father had an incomplete ptosis. The paternal and maternal grandfathers were distant relatives.

Crouzon and Béhague[9] reported a man, aged 72 years, who had bilateral ptosis. His father had had the same condition. Two sisters also had ptosis, while four brothers and their children had normal eyes.

Killian[10] published a pedigree of five generations with eight individuals having a ptosis which covered about three-quarters of the eyeball. There was no change in the ptosis throughout life.

Flieringa[11] reported a family in which the father had normal eyes, while his wife, two sons, and three daughters had ptosis combined with other congenital defects of the eye muscles. There was also nystagmus.

Krämer[12] recorded a family of five generations with ptosis. Of the twelve descendants, seven had the defect.

An unusual type of hereditary ptosis is described by Bartók[13]. His patients were a woman, aged 57 years, her daughter, aged 35 years, and the son of this daughter, aged 9 years, who showed ptosis of the right lower lid. In looking straight forward the margin of the right lower lid was 4 mm. from the lower corneal limbus, while the left touched the limbus. In all three the function of the facial nerves was preserved. In complete closure the lids covered the eyes entirely. The anomaly was noncongenital, but developed in the first four years of life. The author was of the opinion that this was probably due to a partial paresis of certain branches of the left facial nerve.

Hereditary ptosis with external ophthalmoplegia

Although involvement of the superior rectus and at times other ocular muscles is often seen in hereditary ptosis, still the ptosis in these cases is the outstanding defect present. There are many cases, however, in which the ptosis is merely a part of a general paralysis of all the extrinsic ocular muscles. The authors have been unable to find a proved case of hereditary total ophthalmoplegia. Although Hirschberg[15] called his case total ophthalmoplegia, yet in the text he stated that the pupils reacted normally. Li's[84] findings in three sisters are the nearest to hereditary total ophthalmoplegia that have yet been reported, as we shall see later.

In external ophthalmoplegia, usually a slight contraction of the affected muscles, allowing a minimum of motion, can be elicited, if the patient makes a strong effort to move his eyes. The amount of ptosis may vary as has been noted in hereditary congenital ptosis. The external recti and the superior obliques may be spared or only partly affected. In such cases the eyes are divergent and some rotation of the eyes may be present. Often there is impairment of vision and the fundus may reveal changes in the optic nerve and retina. Usually individuals with external ophthalmoplegia have more visual difficulties than those with the ordinary type of ptosis. The condition is observed at birth and very rarely shows any changes during life. The pupils react to light and accommodation.

Cooper[14] reported four generations with external ophthalmoplegia. In the first generation only one male was affected. In the second generation there were three males and two females, and only one of the males was affected. In the third generation there were two males, both of whom were affected. The fourth generation was represented by the offsprings of one of the affected males, two of whose children died in infancy, both with normal eyes. Two living males were affected, while one was not. There were two living females and both had normal eyes. It is interesting to note that no females developed ophthalmoplegia.

Two of the affected males were examined and revealed the following: A male of the third generation, aged 57 years, had almost complete bilateral ptosis with complete paralysis of all ex-

ternal muscles, except the right external rectus, which had enough power to cause a small degree of external strabismus. The eyes were quite immovable. His son, aged 21 years, had also marked bilateral ptosis with complete paralysis of all external muscles. The only movement possible was an almost imperceptible tremor when he made an effort to follow a moving object.

Hirschberg[15] reported the case of a man, aged 31 years, with, what he called, *typischer totalen Ophthalmoplegie.* However, as he described the pupils reacting normally and as he did not think that there was a paralysis of accommodation, this report should be considered as one of external ophthalmoplegia. The ptosis was so marked that it was necessary for the man to raise the lids with the fingers in order to see. There was paralysis of all muscles, except some ability to lower the eyes and a slight rotation of the eyes to the temples. The eyes were somewhat divergent. The pupils were of medium size and reacted normally. The mother and the man's child had the same condition.

The man's grandmother had acquired the defect following a blow; the history of the blow could not be verified. On the following day she gave birth to a full-term boy. This boy showed a picture of epicanthus with bilateral ptosis and paralysis of the superior rectus. The movement of the eyes, with the exception of superduction, were normal. There was a divergent strabismus alternating with cramplike convergence.

Rampoldi[16] reported a brother and a sister with ptosis and immobility of the eyes. The brother could move his right eye a little. The father had the same condition. The grandmother was supposed to have been frightened during pregnancy by the sight of a girl with external ophthalmoplegia.

Lawford[17] described ptosis in a father and three sons. There was immobility of the eyes in the vertical directions, with only slight amount of motility to the sides.

Ahlström[18] published the case of a boy, aged 15 years, with external ophthalmoplegia. The upper left lid covered the pupil. The movements of the eyes were practically gone and it was only with the greatest effort that he could rotate the eyes. When reading he would try to fix with his right eye only. There was a history of several relatives similarly affected.

Dujardin[19] reported a girl, aged 18 years, with complete ptosis. She was unable to raise or lower the lids and there was considerable reduction in the movements of the eyes in the horizontal directions. She had three sisters with a similar defect; the one brother had normal eyes. Her mother and grandfather on the mother's side were similarly affected.

Gazépy[20] reported a brother and a sister with external ophthalmoplegia. Their parents were free from any eye defects. The father had a brother and a sister who had no eye defects, but their children had external ophthalmoplegia. The condition was probably due to atavism, probably transmitted through grandfather to grandsons.

Panas[21] reported a family where the grandfather, father, and four out of six children had external ophthalmoplegia, more or less complete.

Schiler[22] observed external ophthalmoplegia in a father and son. The eyes were divergent. The pupils were narrow and reacted poorly to light. The father had pin-point opacities on the anterior lens capsules.

Guende[23] reported three brothers in a family of five children with external ophthalmoplegia. Two sisters had normal eyes. Their father had ophthalmoplegia.

Ayres[24] reported a man, aged 38 years, who had ptosis of both eyes. There was no motion of the recti nor of the oblique. His maternal grandfather had a similar eye condition.

Gourfein[25] described external ophthalmoplegia in a grandfather, father, and four sons, the female members of the second and third generations having normal eyes. Movements of the eyes were always accompanied by rotary nystagmus. They also showed amblyopia, changes in the optic nerve

and retina, and flattening in the region of the eyebrows.

Heard[26] reported a man, aged 50 years, who had marked bilateral ptosis with inability to move either one eye alone or both together in any direction. He had two sons with ptosis and no movements of the eyes. His father was nearly blind with the same condition. His brother, aged 48 years, had right divergent strabismus associated with some ptosis. There was no movement of the eyes, except a slight circular nystagmus. Two sisters who died at an early age had also had ptosis with no movements of the eyes.

Chaillous and Pagniez[27] presented a woman, aged 50 years, with ptosis, external strabismus, and immobilization of the eyes. Nystagmus was present. She had five living children, three of whom showed the same anomaly, but had lateral motion of the eyes. A granddaughter had the same condition, but less marked.

Weisenburg and Sweet[28] reported a mother and two daughters with external ophthalmoplegia.

Caillaud[29] presented four persons in one family, representing three generations, with external ophthalmoplegia. Otherwise they were normal.

Bradburne[30] reported a family tree of thirty-seven individuals, covering a period from the year 1710 to 1912 and running through five generations, of whom sixteen were believed to have had external ophthalmoplegia, eleven males and five females. The seven surviving members, six males and one female, were described. The condition was more or less complete ptosis of one or both lids, accompanied by an almost complete loss of the ocular movements.

Crouzon and Béhague[31] reported external ophthalmoplegia in three generations. In the first generation one female had the defect, while a brother and a sister did not. The affected female had seven children: two daughters and one son were affected. In the third generation one of the affected daughters had four children and one of these was affected. Her brother who had normal eyes had two normal children.

Pinard and Béthoux[32] saw a female, aged 20 years, with external ophthalmoplegia. This condition could be traced for five generations.

Aurand[33] cited the case of a girl, aged 4 years, in whom he could not elicit any eye movements. The upper lids could not be raised above the corneas. According to the mother, the eyes had been immobile since birth. Of the sisters, the youngest had normal eyes while the elder, aged 6 years, could neither elevate nor depress the eyes and could make only slight lateral movements. The maternal grandmother and one of her cousins, and also several cousins of the father had had slight ptosis. The defect existed only in the females of the family.

The only report of hereditary total ophthalmoplegia with ptosis that could be located is that of Li[34], who reported three children, out of five, in a Chinese family, with this condition. The ptosis was well marked so that in order to see clearly they pushed the lids up with their fingers. The eyes were practically fixed and divergent. A little function of the internal recti could be elicited. There was some lateral nystagmus. Li's impression was that this condition was hereditary.

The pupils of one of the children, a girl, aged 4 years, were as follows: The right pupil was small and contracted. It was slightly pear-shaped and measured about 1.5 mm. in its widest diameter. The left pupil was a trifle smaller than the right and measured about 1.25 mm. It was diagonally oval at about 75 degrees meridian. Light reflexes and reaction to accommodation could not be made out, except with a pencil of strong light directed upon the macular region of each eye. The pupils then showed slight alternating contractions and dilatations. The pupils of a younger sister were similar.

Hereditary noncongenital ptosis

Hereditary noncongenital ptosis is the most unusual type that has been observed. It was first mentioned by Gowers and later by Fuchs, but it was not until 1892 that Dutil fully described

this condition. Most of the cases were reported by the French writers and have been called *ptosis tardif familial* and also tardy ptosis of Dutil. Recently Spencer described a pedigree in English and Meuman in German.

The condition usually appears between the ages of forty and fifty years, although in one of Spencer's patients it was first noticed at the age of sixteen and on one of Meuman's patients at the age of twenty-four. Meuman held that the ptosis apparently appears much earlier, but as it is originally of a mild nature the individuals affected do not become aware of it until it becomes more marked and there is either a disturbance of vision or a consciousness of the appearance of the lids.

First it is noticed that the palpebral fissure is narrower and due to this the vision is reduced. The patient compensates for it by tilting his head backward. Strong contraction of the occipitofrontalis muscle takes place and the eyebrows are drawn upward. Soon this is not sufficient as the lids hang like a veil in front of the eyes. The skin of the lids becomes smooth. Finally the patient is unable to see and his activities and ability to earn a living are hampered. Now in order to see it is necessary for him to raise his lids with his fingers. The process is usually rapid. There are no other ocular or neurological symptoms and no other eye muscles are affected. The vision remains normal.

Gowers[35] was the first to mention the noncongenital type of hereditary ptosis. He said, "Slight bilateral ptosis sometimes runs in families, and may (as I have seen) affect chiefly the female members. It may come on only after the time of puberty." In a later edition of his book, he stated, that it may appear "occasionally after middle life."

Fuchs[36] was the first to describe this condition. The patient was a woman, aged 61 years, in whose family ptosis had existed for three generations with three members involved. In her youth the palpebral fissure had been narrow, and became narrower with years. Examination showed incomplete right ptosis and almost complete left. There was marked folding of the skin of the forehead and the eyebrows were higher than normal. The skin of the lids was thin and retracted above, below the rim of the orbit. Her mother, who was dead, had also had the same condition, which became complete late in life. Her two brothers, who were seen in a photograph, had bilateral ptosis. Her two grown children, whose photographs were also examined, had ptosis which differed principally in the fact that it had existed since childhood, perhaps since birth, and in later years had become more marked.

Dutil[37] was the first fully to describe this condition in two families. In the first family, the first generation was represented by a great-grandfather. His eyes had been almost covered by the lids and he had had to tilt his head in order to see. In the second generation there were two males with ptosis, which appeared when they were fifty years of age. In the third, two males and three females were affected. In the fourth generation there were two males; one developed ptosis at the age of fifty years. The other, who died before he was fifty years old, had normal eyes. In all these cases the outstanding observations were that the ptosis appeared after the age of fifty and that no other ocular muscle was involved. The vision was normal. Otherwise all of these individuals were healthy.

Dutil also reported a man, aged 57 years, who, since his forty-fifth year, had had a bilateral ptosis which was almost symmetrical. Eighteen months after the appearance of the ptosis the paralysis became complete. The upper lids almost completely covered the eyeball. The forehead was wrinkled all the time. He used forceps to raise a lid in order to see. The vision was normal. His father and grandfather also had had ptosis. The father noticed the ptosis on the right side at the age of forty-five years, and in a few months it also affected the left eye. The condition never became as marked as that of his son. The patient had a brother, aged fifty-three years, who had normal eyes.

Delord[38] published the pedigree of three generations. The first generation

is represented by a woman who developed the ptosis late in life. Her three children all had ptosis appearing between the ages of forty and fifty years. These all married and there were eight offsprings. Two died before the age of thirty years and had no eye defects. Five others had ptosis and one was free.

A typical case, as described by Delord, was that of a man in the third generation, who noticed at the age of sixty-one years, that he could not raise his lids, especially toward evening. Soon he found that he could not raise the lids during the day. In two months the condition got so much worse that the pupils were covered and he was unable to continue his work. He had to raise the lids with his fingers in order to see. Otherwise he was healthy.

Boulanger[39] studied twenty-three cases, including his own, which were reported to that time. He found that there was always a familial history, and the condition usually started at the age of fifty years, rarely earlier, and occasionally later. Of the twenty-three cases, eight were in females and fifteen in males. The transmission was direct, no generation being skipped.

Spencer's[40] cases belong to this classification and are the only report of this type of hereditary ptosis in English. He saw a man, aged 27 years, who gave a history of ptosis which he noticed when he was fifteen or sixteen years old. He thought that this had gradually increased since that time, but had become much worse during the last three years. His mother, maternal grandmother, two maternal aunts, and one brother all had had a similar eye condition. His younger brother's lids had begun to droop at the age of twenty-two years. His mother had great difficulty in raising her lids.

Spencer's patient had bilateral ptosis, with limited eye movements, and he was unable to raise either lid without the assistance of the occipitofrontalis. Spencer believed that it was congenital absence of the superior rectus and the levator of the lids.

Meuman[41] reported a family tree of five generations. The first generation is represented by a female. In her family there were known cases of ptosis. In the five generations there were forty-two individuals, ten of them so young that the possibility of a later appearance of ptosis could not be ruled out. Of the thirty-two adults, twenty-one were known to have the condition, six had normal eyes, and the condition of five was not definitely known. Every member of the second and third generation, three and nine individuals respectively, had the ptosis, while four of the fifteen in the fourth generation were known to have normal eyes. The ptosis usually appeared between the ages of forty and fifty years, and slowly progressed. In two of the patients the ptosis was first noticed at the ages of twenty-four and thirty years respectively, and was originally of a mild character.

An example of hereditary external ophthalmoplegia of noncongenital origin is illustrated by the cases reported by Beamount. In these patients the disease appeared between the ages of twenty and thirty years.

Beamount[42] described the pedigree of four generations. The first generation is represented by a female. She had five children, four males, two of whom had the defect, and one female with the anomaly. Of the two married males with the defect, one had four male children, one of them showing the ophthalmoplegia, and two females, one having the defect. The other male had five children: three males, two showing the defect, and two females, one having the defect. The offsprings of the third generation were as follows: A male with normal eyes had seven normal children, while a female with normal eyes had eleven normal children. Of those affected, a male had two daughters with ophthalmoplegia and one son and one daughter with normal eyes; a female had eleven normal children and one daughter with the eye defect; a male had six normal children.

The ptosis varied with the age of the patient, the lids covering the pupils completely in old patients. There were practically no movements of the eyes in the affected persons.

Hereditary ptosis with epicanthus

Hereditary ptosis with epicanthus is usually bilateral and is sometimes associated with paralysis of the extrinsic ocular muscles, especially the superior and external recti.

According to Whitnall[43] epicanthus is formed by the skin alone of the medial part of the orbital region of the upper lid, and curves downward, covering the medial canthus and joining the nasal-jugal furrow of the lower lid. According to Usher the fold of the skin forming an epicanthus is continuous with the skin at the root of the nose and by pinching up the skin of the nose an epicanthus can be diminished or made to disappear. The puncta and caruncle and part of the lids may be hidden by the fold. An appearance of internal strabismus may be produced when the epicanthus extends far over toward the cornea.

Usher[44] reported the occurrence in four generations and traced its transmission by both continuous and discontinuous descent. The first two generations were free of any defect; there were three members in each generation. There were six members in the third generation, with only one male showing the epicanthus and ptosis. In the fourth generation there were twenty-seven members; fourteen of these were offsprings from the ones in the third generation who had had no eye defect and these had normal eyes. The male with the ptosis in the third generation had thirteen children, five of whom had the defect. In the fifth generation there were thirty-four children; twenty-seven of them descended from the male who had the defect in the third generation, and of these ten were affected. In the sixth generation there were four offsprings, descendants of the male with the defect in the third generation, and of these two were affected. Altogether fifteen individuals, six males and nine females, with epicanthus and ptosis descended from the male with the defect in the third generation.

A typical case was that of a male, aged 70 years, who had narrow palpebral fissures, especially on the right side, where the pupil was completely covered. The skin of the epicanthus and of the upper lid was smooth. The eye movements were normal. Some of these patients had paralysis of the superior rectus and one had nystagmus.

Usher reviewed the literature and gave charts of fourteen other pedigrees of epicanthus associated with ptosis; in none of these cases was there any consanguinity: Galezowski[45], father and two children; Manz[46], five children in a sibship of ten; Alvarado[47], a father and two of his children; Da Fonseca[48], four brothers; Vignes[49], twelve cases in four generations with twenty-six members; Schmidgall[50], a father and two daughters; Bach[51], a father and two daughters; Sattler[52], a father and four sons; Steinheim[53], fourteen cases in five generations with thirty-two members; Brückner[54], two brothers in one generation in a family of eight, and four brothers in the next generation, offsprings of a mother who in the previous generation had had normal eyes; Hütteman[55], eleven cases in three generations with seventeen members; Braun[56], eight affected females. In one pedigree the father was effected, also two of his daughters, while one sibling had normal vision; in another pedigree, the father and three of his daughters were affected, while another daughter and three other children had normal eyes. He also reported another pedigree of five individuals affected in three generations with fifteen members. Hirschberg's[15] case may also be included here, that of a boy whose mother and sister had external ophthalmoplegia while he had ptosis with epicanthus.

Since Usher's article the following reports have appeared: McIlroy[57] described a case of well-marked bilateral ptosis with epicanthus, the pupils being more than half covered by the lids, and the head thrown back in the attitude characteristic of bilateral ptosis. There was absence or poor development of the levator muscles. Nystagmus and divergent strabismus were also present. McIlroy traced this condition through four generations. Twelve members were affected, seven males and five

females. In McIlroy's pedigree the condition was transmitted unfailingly through the male.

Löhlein[58] reproduced a photograph of two sisters and one brother with hereditary ptosis and epicanthus.

Cockayne[59] reported a pedigree of ptosis with epicanthus in five generations. The abnormality was transmitted in every case by an affected member. There were twenty-seven sibships, thirteen were affected and fourteen were normal.

Manson[60] showed photographs of a family in which four members in two generations were affected with ptosis and epicanthus.

Ross[61] reported a boy, aged 5 years, who had marked ptosis and epicanthus. The ptosis was so marked that it was necessary for him to flex his neck at the back to the utmost to look at the ceiling. The condition could be traced through four generations. There was no history of any intermarriage in the family.

Blepharophimosis

Blepharophimosis is not a true type of ptosis. This is illustrated by the pedigree of five generations described by Dimitry[62].

There were twenty-one individuals observed in five known generations of thirty-eight living members. Each person showed a similar picture: The corneas were of the usual dimensions. No paralysis of the recti muscles was present. The bony orbits were properly developed and of the usual size. The upper lids covered from one third to one half of the corneas. Slight elevation of the lids occurred when the muscles of the forehead were called into action. The palpebral apertures were so small that not even by the use of the fingers could the lids be made to uncover the corneas satisfactorily. The condition was that of a small aperture in which the lids were stretched over a properly developed bony orbit, constricted by its palpebral ligamentous attachment. Of the known sexes, eight were males and eight females. The male and female transmitted the condition in equal numbers.

Comment

In order to prevent confusion in describing the various types of hereditary ptosis observed, we recommend the following nomenclature: All hereditary ptosis should be designated as such and the type of ptosis described, such as: 1, hereditary congenital ptosis; 2, hereditary ptosis with external ophthalmoplegia; 3, hereditary noncongenital ptosis; 4, hereditary ptosis with epicanthus.

490 Post Street.

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THE MANAGEMENT OF A CASE OF CONVERGENT STRABISMUS

MARGARET DOBSON, M.D.
LONDON

The author gives a short account of the methods adopted in her private orthoptic-training clinic and in the London County Council (Kilburn) Eye Clinic, where she is in charge of the Orthoptic Training Center.

The nonoperative treatment of a case of convergent strabismus may be divided into three stages: I. Improvement of the amblyopia affecting the squinting eye. II. Enlargement of the restricted monocular field of fixation in the squinting eye, and the strengthening of the concomitant movement of the eyes. III. Fusion training, which may be divided into five classes:

1. *First-grade binocular vision,* or the procuring of simultaneous perception; i.e., diplopia, which proves absence of total suppression (as in true alternating squint).
2. *Second-grade binocular vision.* The superposition of the diplopic images must be obtained; i.e., binocular fixation.
3. *Third-grade binocular vision.* Fusion of the superimposed images must take place.
4. *Fourth-grade binocular vision.* Fusion with stereopsis must be obtained.
5. *Fifth-grade binocular vision.* Stereoscopic vision together with some degree of amplitude of fusion, more especially abduction, must be obtained.

Stage I

Improvement of amblyopia in the squinting eye. The treatment of amblyopia aims at stimulating the macula lutea and perimacular region of the squinting eye which is found to be deficient in light, color, and form sense. When the macular region of this eye has begun to function, the vision in the sound eye must be reduced, if possible to that of the squinting eye, by means of screens, in order to equalize vision in the two eyes, thus preventing the squinting eye from *suppressing* its feeble and insecurely held image.

The refractive error in each eye must be accurately corrected. Although atropine should be used to paralyze the ciliary muscle, it is important not to blur the distant vision of either eye when prescribing glasses. Stronger plus lenses may be given as bifocals for close work, irrespective of age. The visual acuity of the sound eye must be reduced, when necessary with reducing screens.

When the deviating eye turns in and up, the defect in the superior-rectus muscle may be temporally corrected by means of a base-up prism before the upturned eye. This must be incorporated in the corrective lens of the spectacles; as the squint decreases it is frequently possible to discard the prism.

To improve the visual acuity of the amblyopic eye the concentrators (fig. 1) have been found to be most useful.

They can be worn under the spectacle frame or used as a frame for holding the lenses.

If the visual acuity of the amblyopic eye is very poor and the squint more than 15 degrees, a black disc is inserted before the perforation on the side of the sound eye. The eye is by this means completely covered, and the concentrator must be worn continually. If the amblyopia is not congenital an improvement is found at the end of one month's treatment.

As soon as the vision in the amblyopic eye has improved to 6/36 it is better not to exclude the sound eye completely, binocular fixation must be encouraged; a scientype screen placed before the sound eye, in order to reduce the visual acuity to that of the amblyopic eye, must be worn to equalize the vision of both eyes.

When the vision in the amblyopic eye has been improved to 6/18 true fusion of the superimposed images should be obtained with the synoptiscope, and it is at this stage that the concentrators can be worn with a ruby-

red celluloid or glass screen before the sound eye. This screen causes all red objects seen through it to appear light pink or white. The amblyopic eye is in consequence stimulated by any bright-red object. A signal-red color has been found to be the most powerful stimulant to an amblyopic eye and is the most satisfactory means of preventing *suppression of vision in the squinting eye.*

During the training of an amblyopic eye, the synoptiscope may be used in the consulting room (see fusion training) and for home use the following aids have been found useful:

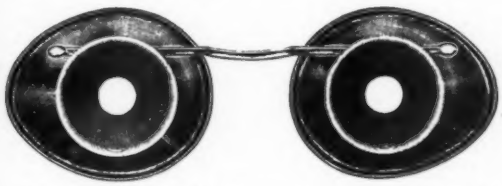

Fig. 1 (Dobson). Concentrators (Newbold and Bulford, Ltd., London). The concentrators can be worn under any ordinary spectacle frame, the interpupillary distance being accurately adjusted, by sliding the right and left halves of the occluders along the metal bar. In cases of squint with a high degree of amblyopia ex anopsia, the vulcanite front over the sound eye is not perforated. It can be adjusted accurately, so as to exclude all light. The partial occluder, with a central opening having a diameter of 9 mm. to 20 mm., is worn over the amblyopic eye. This cuts off the greater part of the peripheral fields, encouraging the patient to use the macular and perimacular regions only, which extend eight degrees nasalwards and twelve degrees temporalwards. When the amblyopic condition has been sufficiently improved, windows having a diameter of 12 to 20 mm. can be cut before both eyes, each half being so adjusted that the inner edges of the concentrator fit closely to the nose. In this way, septa are formed which maintain the action of each eye; the nasal fields are limited, creating a condition resembling binasal hemianopsia and thus the eyes will be enabled to be used independently. If the left eye squints, the right eye will maintain fixation. When the object passes to the nasal side of the right eye, the septum will prevent the right eye from seeing the object and the left eye must now become the fixing eye; in this way a coordinate exercise will be maintained, which forces the squinting eye to be used.

1. The colored-bead Amblyopia Trainer, for amblyopia of less than 6/60 Snellen vision (S. Pulzer & Son, London).

2. The Amblyopia Reader*, a book printed partly in black and partly in light red, with illustrations, the outstanding color of which is light red. The child wears a red screen before the sound eye, and the red lettering of the print and the red color of the pictures are invisible through this screen.

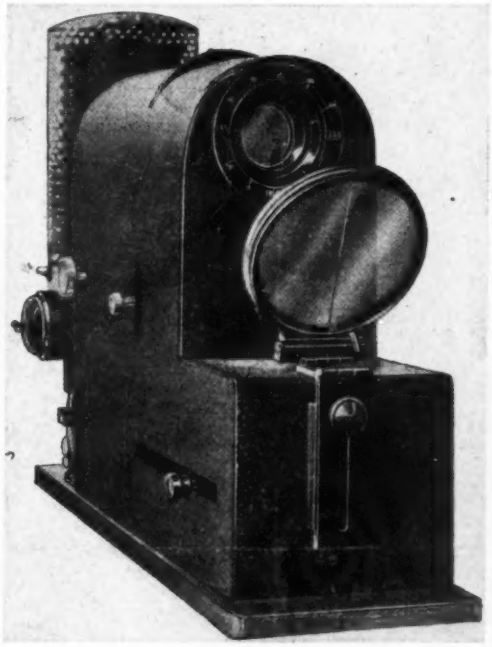

Fig. 2 (Dobson). The Myoscope (Skewes—Clement Clarke, London).

Stage II

To increase the restricted monocular field of fixation in the squinting eye, and to strengthen the concomitant movements of the eyes. The majority of convergent concomitant squints are not, strictly speaking, concomitant. The external-rectus muscle of the deviating eye is paretic to a slight extent from improper use.

To increase the field of fixation on the temporal side will greatly help in procuring fusion of the true macular images, and will thus prevent fusion of a falsely projected image; i.e., an image projected from the immediate perimacular region.

* Obtainable from Theodore Hamblin, London.

The Myoscope is the instrument used for investigating the restricted field, and is a powerful aid for increasing the motor field of vision monocularly, and for establishing true concomitancy.

The instrument (fig. 2) consists of a stationary optical system for projecting upon a screen an image, such as a dog or cat, which readily attracts the attention of a child.

A second optical system is employed to make the projected image travel in any direction over the screen, the eye following the projected image horizontally, vertically, obliquely, or in a rotary manner, with the head securely fixed. In this manner the direction and extent of any muscle movement can be charted.

To increase the monocular field of fixation in the direction of the weak muscles, the patient is seated, with the sound eye covered, in front of the screen upon which is projected the object of fixation. This is made to travel over the surface of the screen. The field of fixation is that area upon the screen within which the patient can fixate without moving his head. The object which the squinting eye is fixing, is made to travel across the screen in a horizontal direction at a speed of 15 cycles per minute, and the patient is instructed to follow it. By placing the patient a little more to the left of the center of the screen or by placing him nearer to the screen, the eye can be made to swing more to the temporal side. The object may be made to move in varying meridians and circular movements are important.

To develop concomitancy by means of binocular movements, red and green complementary colored glasses may be placed before the eyes, and a white object projected upon the screen. The squinting patient who has simultaneous perception, with encouragement sees diplopic images, red and green in color. The apparent separation differs in various parts of the field, and the meridians where the separation is greatest must be especially exercised.

With a cardboard septum (8 inches long by 4 inches deep) fixed to the patient's forehead, the binocular field may be separated, the object appearing red or green as it swings from side to side of the septum. These exercises must be continued until the objects are seen in motor fields of similar extent.

Fusion can be encouraged by replacing the white object by bichromatic images, red and green, the patient wearing filters of complementary colors before his eyes, so that one object is visible to the right eye, the other to the left eye. By moving the slides in and out, the objects may be separated, made to overlap, or crossed in the opposite direction. The movement of the slides will, in this way, act as prisms, base in or base out.

This part of the training can be applied to very young children, and to those with visual acuity of 6/60 only.

Stage III

Fusion Training.

1. *First-grade binocular vision* or the procuring of simultaneous macular perception; i.e., diplopia. Our aim is to make the squinting patient see the two halves of the stereogram, under equal illumination at one and the same time, with the macula lutea of each eye. This amounts to measuring the angle of squint.

Large, simple stereograms, highly colored, must be used, such as are found in Kroll's series, e.g., the bee and the pear, the frog and the glass bowl, the parrot and the cage, or, better still, two large differently colored discs, which, when fused, are another color.

The instrument most suitable for obtaining simultaneous macular perception is the Synoptiscope, which is a stereoscope of the Wheatstone reflecting type.

The larger of the two halves of the stereogram is placed before the squinting eye, at the angle of deviation, and very brightly illuminated so that an eye with only 6/60 vision can see the object. The other half of the stereogram is placed before the sound eye and poorly illuminated. In this way *suppression* of the image of the amblyopic eye is prevented. The patient is asked if he sees both pictures with the right and left eye, respectively, at one and the same time. The patient is encouraged to hold

the pictures while the tubes of the instrument are gradually separated.

2. *Second-grade binocular vision* or binocular fixation. The images seen simultaneously must be made to approach until they become superimposed.

Very simple stereograms having similar halves should be used. Javal used two large black discs upon a white background; smaller discs, as control marks to insure that superposition had taken place, were placed above and below on each half of the stereogram, respectively.

The fusion area has been found to extend 3° beyond the macula lutea. Vision in this area is 6/36, so that to obtain second-class binocular vision the visual acuity in the amblyopic eye must measure this amount, and the half of the stereogram before the amblyopic eye must be seen clearly.

A Chevasse or Raphael scientype glass may be placed before the sound eye, in order to reduce and so equalize the vision in the two eyes. Equality of vision in the two eyes is a great inducement to superposition of the images.

3. *Third-grade binocular vision* or binocular fusion. True fusion of the superimposed images may now be obtained. The visual acuity of the amblyopic eye should be 6/18.

Stereograms which stimulate fusion must be used—for instance, half of one picture is presented to one eye and half to the other, the complete picture being seen only when fusion has taken place. The stereograms of Hegg, Dahlfield, Hausman, Wells, and Satler contain many excellent examples. The ON-NE series of Wells may be especially mentioned as having great holding properties. The F-L card is extremely useful. Two large, black discs form the separate halves of this stereogram; the left disc has imprinted upon it the letter F in white, and the right disc the letter L. When fused the patient sees one black disc upon which is seen the letter E; but true binocular fusion has not taken place until the patient can see some small letters in black within the white outline of the E.

4. *Fourth-grade binocular vision* or stereoscopic binocular vision. When binocular fusion has been obtained, stereoscopic vision must be cultivated. The simplest stereograms must at first be used, such as the two aspects of a cube, or pyramid, as seen with the right and left eye, respectively. Gradually more complicated stereograms are used in which the perspective of many points

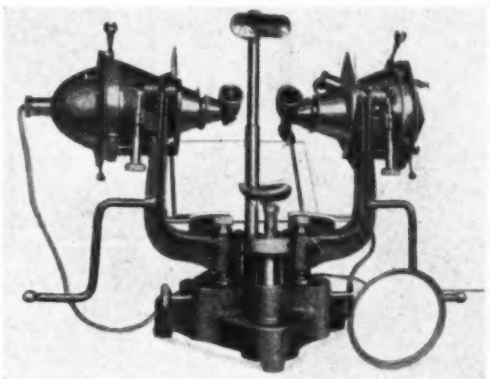

Fig. 3 (Dobson). The Synoptiscope.

is different; many of these stereograms necessitate a 6/6 V.A. in each eye.

The Swan-Cole stereograms deserve special mention. The objects comprising these stereograms are small geometrical figures, and in order that the details can be seen stereoscopically, with their proper projection, macular vision must be possible. They are printed in red, which is an additional stimulus to visual acuity. An index card shows at once the patient's easiest fusible distance between the centers of the objects comprising the stereoscopic pairs, and indicates the number of the card which must be used at the commencement of training.

The separation between the cards varies from 2½ cm. to 11 cm.; one card having a normal separation of 6 cm. is printed stereoscopically on one side and flat on the other, and the patient is asked to observe any difference.

A simple stereoscope of the Holmes type can be used at this stage of the training.

5. *Fifth-grade binocular vision,* or stereoscopic binocular vision, with some amplitude of fusional convergence. .

To develop ductions, a variable prism stereoscope is recommended for consulting-room use; and for home training, a simple stereoscope (Ellis Optical Co.) having +3D lenses in the lens holders, which can be accurately adjusted to any interpupillary distance. The card holder is placed at a distance of 33 cm., the focal length of the lenses. The stereograms having an exact separation of the pictures corresponding to the interpupillary distance are placed in the holder, and at this stage of the training, instant fusion is obtained; stereograms with a wider separation are used until fusion with a separation of 10 or 11 cm. is obtained. In this way, negative relative convergence or fusional abduction can be developed.

In the same way, fusional adduction can be developed by using cards with a decreasing separation.

40 Park Lane, W.I.

THE OCULAR MANIFESTATIONS OBSERVED IN INTRACRANIAL ADAMANTINOMA

Report of eighteen cases

T. B. Holloway, M.D.
PHILADELPHIA

An analysis is made of eighteen cases of adamantinoma of the stalk observed at the hospital of the University of Pennsylvania together with twenty-three case reports taken from the literature. These findings are compared with those observed in an analysis of one hundred and three cases of pituitary adenoma. From the Departments of Neurosurgery and Ophthalmology, University of Pennsylvania School of Medicine. Read before the American Ophthalmological Society at Lucerne-in-Quebec, Canada, July, 1934.

This interesting type of tumor has been variously described as an adamantinoma, ameloblastoma, or craniopharyngioma, the last by Cushing, as well as by Bailey[1], who gives a detailed description in his excellent work on intracranial tumors.

Most of the literature dealing with this type of tumor may be summed up in the contributions of the above authors with those of Duffy[2], Critchley and Ironsides[3], Peet[4], Beckman and Kubie[5], and Frazier and Alpers[6]. Brief reference will be made to the embryology, histology, and pathology of these growths as noted by these contributors.

The term adamantinoma originated from the resemblance of this tumor to the adamantine tumors of the jaw and not because of its consistence. Onanoff, writing in 1892, is credited as having first described this similarity. Luschke in 1860 was the first to note collections of squamous epithelium lying in relation to the hypothysis, but it was Erdheim's observations in 1904 that attracted greater attention to these cells. In a series of examinations he noted an upper group near the base of the brain on the anterior aspect of the infundibulum, and another group beneath the dura in the angle between the inferior end of the infundibulum and the anterior lobe.

The adamantinoma is usually spherical or ovoid and about the size of a walnut, although it may attain a larger size. The enamel-forming cell is termed an adamantoblast or ameloblast. Tree-like branches or trabeculae made up of several types of cells are present, the ameloblastic layer being the characteristic one. At times a whorllike arrangement may be noted among the innermost cells of the trabeculae. The supporting tissue is usually fibrous tissue, occasionally neurogliar. Calcareous and cystic changes occur within the epithelial masses and the latter to a lesser degree in the stroma. The growths vary in their malignancy.

Alpers classifies the stalk tumors into (1) Adamantinomata, (2) Rathke-pouch tumors, (3) Carcinomata, and (4) Teratomata. In an article that is now on press, Frazier and Alpers express the

belief that the term Rathke-pouch tumor has been applied too loosely to tumors arising from the craniopharyngeal duct. They believe the true Rathke-pouch tumor should be differentiated from others in the sellar region and record the history of a case which amply illustrates their opinions.

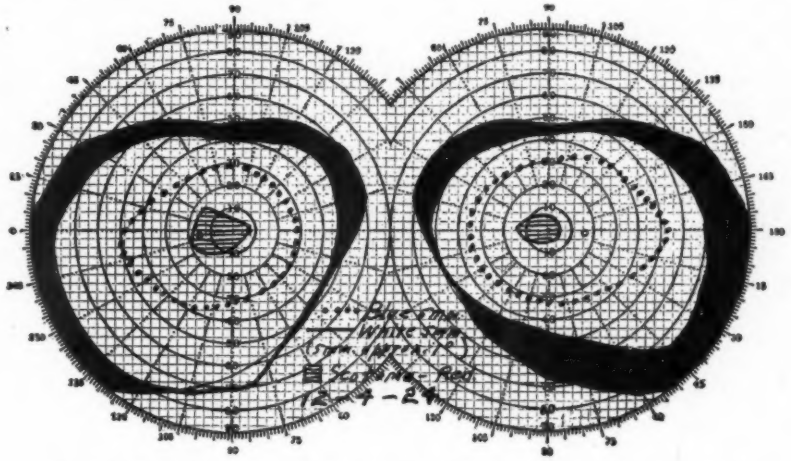

Fig. 1 (Holloway). Central scotomata and slight concentric contraction of fields, six weeks before operation.

Naturally, the cell rests determine the extra- or intrasellar origin of the growth. If the former, with the tumor near the base of the brain, the pituitary body and the chiasm are below and probably anterior. Of course, with an intrasellar growth the chiasm is above.

The following comments concern eighteen of the verified cases of adamantinoma among the stalk tumors in the Neurosurgical Department of the University Hospital. Here as in the pituitary adenomata, headache and failing vision are the usual early signs, but it is questionable whether data relating to these symptoms are quite as accurate in the adamantinoma group, owing to the fact that many of the patients

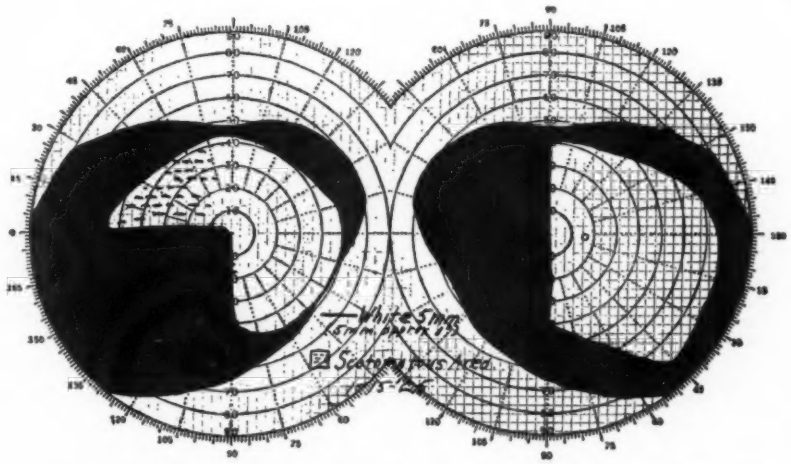

Fig. 2 (Holloway). Same case as in Fig. 1, four days before operation. Left homonymous hemianopsia, complete in field of right eye, incomplete in left.

are quite young. In the adenomata the predominant site is frontal. In this type of tumor this is also true, although

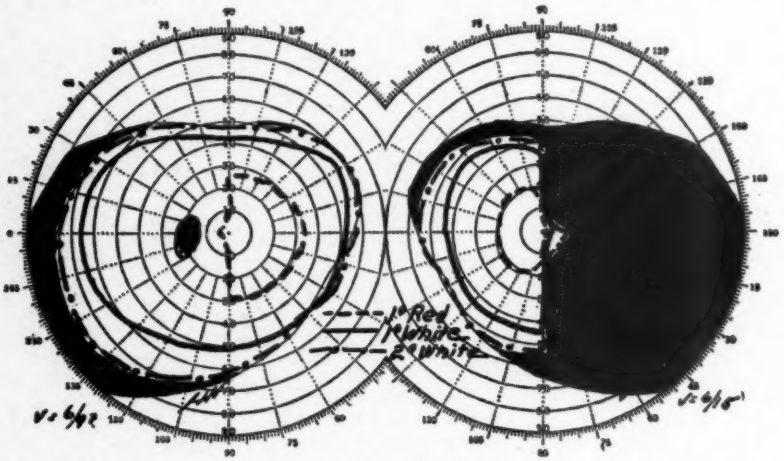

Fig. 3 (Holloway). Bitemporal hemianopsia. Sparing of macula in right eye. Complete with sparing of the macula for 1° red, and slight temporal contraction for white in the left eye.

other sites may be stressed, and, owing to the more frequent association of increased intracranial tension, there would be a tendency toward less localization, especially late or in those

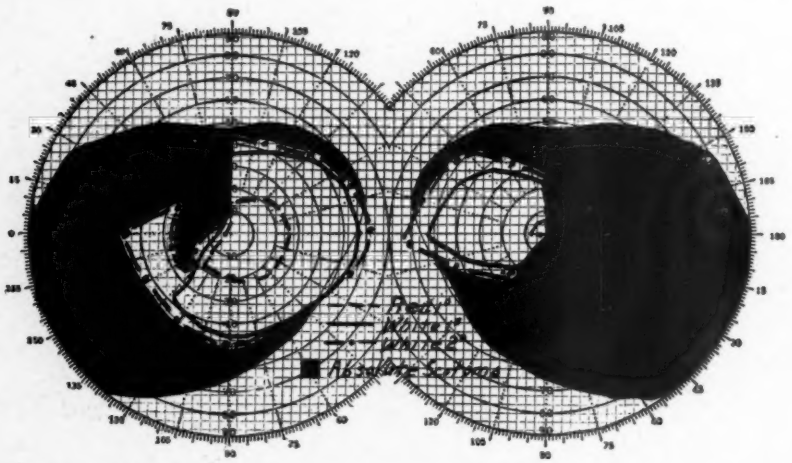

Fig. 4 (Holloway). Bitemporal hemianopsia. Retained nasal field, more in upper quadrant in the right eye; incomplete hemianopsia in the left eye with superior-quadrant indentation involving the blind spot.

growths apt to involve the third ventricle. In the two youngest patients in this series, aged seven years each, headaches had been present for four years in one instance, while an internal squint was the first manifestation in the other case. This symptom with the early failing vision tends to bring many of these patients under the observation of the ophthalmologist; certain facts relating to this were discussed by me when speaking of the adenomata and need not be repeated here.

In the present series 13 were males

and 5 females. The average age was 20.8 years; the youngest patient was 7, the oldest 50 years of age.

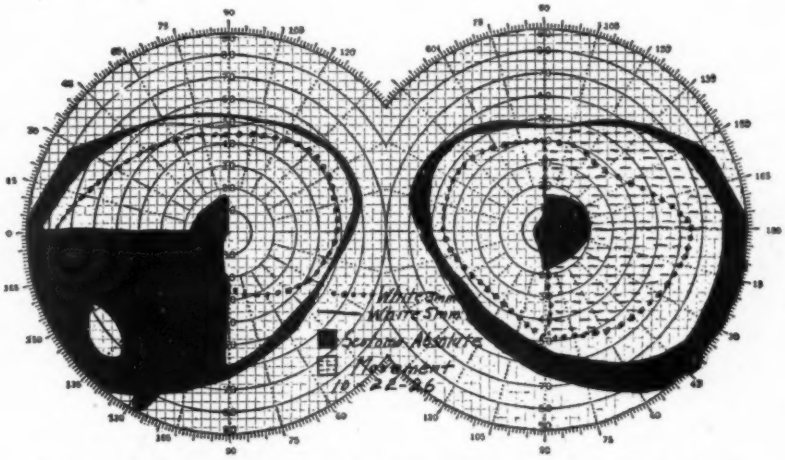

Fig. 5 (Holloway). Fields of bitemporal type. In the right eye a temporal scotoma. In the left eye an inferior-temporal-quadrant defect with a small retained field; defect has probably broken into a temporal scotoma.

One patient was totally blind and three others practically so; in fact, in the majority of the cases the vision showed a marked degree of depreciation when the patients first came under observation; in about a third of them there was a well-defined inequality.

In studying the disc changes there was found a distinct contrast with the pituitary-adenoma group. In the present series, papilledema, or evidences of it, was observed in 10 instances, or 55.5 percent, and in 8 cases, or 44.4 percent, a primary optic atrophy was noted. One case has been included among the papilledema group in which the signs were interpreted as a beginning choking superimposed upon a partially atrophic disc. Concerning this interest-

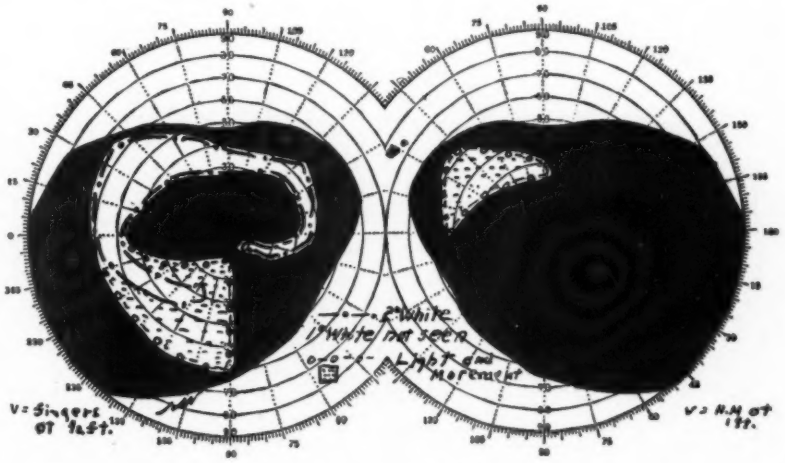

Fig. 6 (Holloway). Tendency to a right homonymous hemianopsia with beginning involvement of the inferior portion of the retained field in the left eye.

ing manifestation, we have not noted it in any sense so frequently as has been recorded among intracranial tumors, as a group, from certain other clinics. With us it has been an unusual occurrence.

In regard to the visual fields, there was a bitemporal hemianopsia in 5 cases; left homonymous hemianopsia and concentrically contracted fields were each noted in two cases. Right homonymous hemianopsia was noted but once. In two instances the patient was blind or the vision too defective to permit of fields. In one case, a rough test failed to show any gross form defects, and in another, the mental condition of the patient prevented subjective testing. In four cases one eye was blind while a temporal loss was present in the other eye.

If we now include with our 18 cases, 2 recorded by Duffy, 7 by Critchley and Ironsides, 3 by Peet, and 11 by Beckman and Kubie, we have a total of 41 cases of verified adamantinomata. In this group 23 were males and 18 females; the average age was 20.7 years. The youngest patient was aged six years (Peet), the oldest, 60 years (Critchley and Ironsides). In the first decade there were 9 cases; in the second, 17; in the third, 6; in the fourth, 5; while in the fifth and sixth there were 3 and 1, respectively. Thus, 26 cases or 63.4 percent developed in the first twenty years of life.

Concerning the vision, this was not obtainable in five cases. In one instance normal vision was present when the patient first came under observation. In 5 cases both eyes had 6/12 or better, but not normal. In 26 cases both eyes had 6/15 or less. In 18 cases the vision was reduced in both eyes to some degree between 6/60 and hand movements. Blindness or light perception was present in one eye in six instances and in both eyes in four. Certain of the above figures, of course, include duplicates.

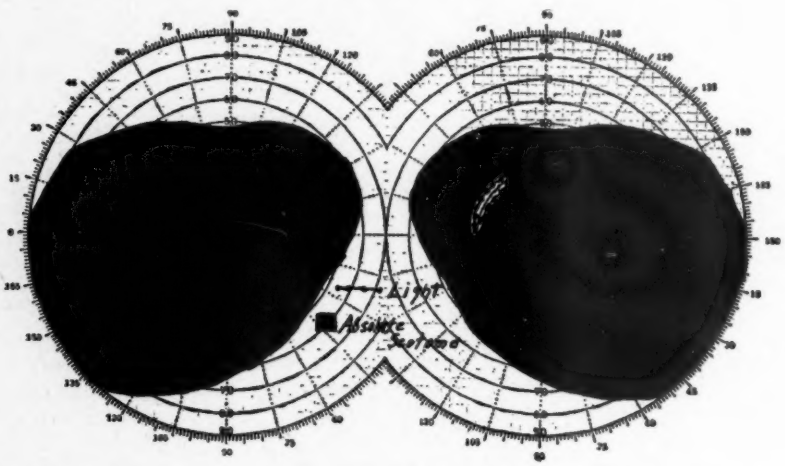

Fig. 7 (Holloway). Small retained field in upper nasal quadrant of the right eye. The left eye was blind.

Including pallor as indicative of atrophy, we find that among 41 cases, 22, or 53.6 percent, manifested a papilledema and 19, or 46.3 percent, a primary optic atrophy. It is interesting to note that among the 22 cases showing papilledema, 13 patients, or 59 percent, were but fifteen years of age or younger. Beckman and Kubie referred to this greater prevalence of papilledema among the younger patients. These figures of papilledema in 53.6 percent and primary optic atrophy in 46.3 percent stand out in striking contrast to what was found in 105 verified pituitary-adenoma cases, in which a primary atrophy was observed in 84.7 percent, papilledema in 8.5 percent, and normal discs in 6.6 percent.

The fields were more difficult to classify, doubtless due to the age of some of these patients, the excessive loss of vision when the patients came under observation, or the decided inequality of vision, when but a temporal or nasal field remained. To arrive at definite types we must eliminate 6 cases in which the fields could not be obtained; 5 cases in which one eye was blind and there was a temporal loss in the other; 3 in which only rough tests could be used; 2 in which scotomata alone were referred to, and 3 instances including blindness in one eye with concentric contraction in the other, temporal loss in one eye with concentric contraction in the fellow eye, and finally, a small remaining field in the upper nasal sector with blindness in the other eye. Thus, but 22 definitely typed fields remain; 11, or 50 percent, were bitemporal, 6 or 27.2 percent were of the homonymous hemianopsic type, three right and three left; in 4, or 18.1 percent, there existed a concentric contraction, while one, 4.5 percent, tended to an inferior hemianopsia. In one of our cases, listed as a bitemporal hemianopsia, after the evacuation of a cyst the fields changed to a left homonymous hemianopsia and progressed as such up to the time of the removal of the growth (figs. 8, 9, 10, 11). In 103 verified pituitary-adenoma cases there was a bitemporal hemianopsia in 74.8 percent, homonymous hemianopsia in 10.7 percent. In 1.9 percent the fields were concentrically contracted, and the same incidence pertained to altitudinal hemianopsia. In 4.9 percent the fields were normal, and uncertain in 5.8 percent. On account of the small number of cases available in the adamantinoma group, this contrast is not so convincing as that relating to the disc manifestations but there are some facts that are at least suggestive, which will be referred to later on.

It is probable that some who have not thought of these cases with more than passing consideration have regarded the term suprasellar as necessarily synonymous with suprachiasmal, as far as the position of a tumor is concerned. Needless to say, this is not the case and these suprachiasmal growths may occupy various positions in relation to the chiasm. Thus, in our 18 cases now under discussion, the tumor occupied a prechiasmal position in 7 cases, retrochiasmal in 8, and suprachiasmal in 3. It is interesting to note that in one of Beckman and Kubie's cases of adamantinoma the growth was intrasellar.

When a sufficient number of these cases have been placed on record a study of the disc and field manifestations in relation to the position of the growth will provide interesting and useful information. Even in our small group some suggestion of the probable tendency is present. For example in the prechiasmal group, there were two with papilledema and five with primary optic atrophy. In the eight retrochiasmal cases, choking was present in seven and atrophy but once. Here we have included with the papilledema group the one case in which there was an atrophy and later manifested evidences of slight swelling. In the suprachiasmal cases there was one of choking, the other two were of atrophic discs. So it would seem that the retrochiasmal position of an adamantinoma in a patient fifteen years of age or younger would be associated, most probably, with papilledema; whereas, a prechiasmal position of the growth, especially if the patient were over thirty years of age would be more apt to induce an atrophy of the disc. In the prechiasmal group, one patient had a concentric contraction of the field, the other six had temporal field defects, in three instances bilateral, while in the other three the defect was unilateral with the other eye blind. Among the eight retrochiasmal cases, for one reason or another, fields could not be obtained in three instances, while three patients had homonymous defects, one a bitemporal defect and in the remaining cases the fields were concentrically contracted. As to the suprachiasmal cases, the fields could not be obtained in one case, in another there was a bitemporal hemianopsia, while in the third appeared a unilateral temporal defect with the other eye blind.

Theoretically it would seem a simple matter to determine the approximate

type of fields that should result from a growth having a definite relationship to the chiasm, but, as has been referred to elsewhere, the anatomic and possible position of the growth resulting in a field of homonymous type due to direct pressure on the tract. Considering the possible indirect involvement of the

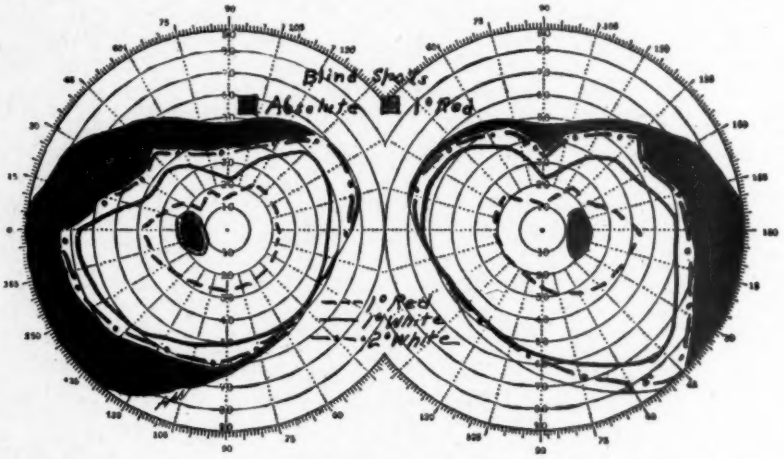

Fig. 8 (Holloway). Beginning bitemporal hemianopsia six weeks before evacuation of cyst.

pathologic conditions existing are too variable to permit of this with any degree of assurance. In our present series the preoperative fields of two patients had inferior field defects and one of these also showed well-defined

third ventricle and the resulting increased intracranial tension and choking that occur in many of these cases, the possibility of masked field defects exists. I have already referred to one case in which the field became definitely

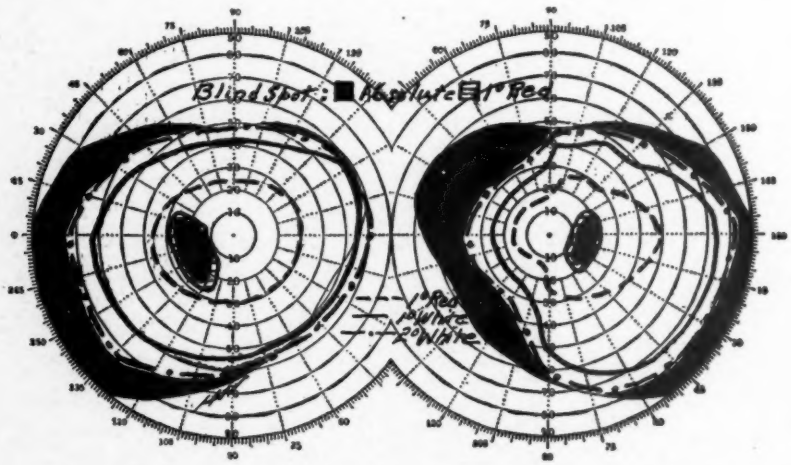

Fig. 9 (Holloway). Same case two weeks after evacuation of cyst.

scotomata. In one of these two cases the growth was prechiasmal and the field of bitemporal type, and in the other case there was a retrochiasmal

homonymous after the evacuation of the associated cyst. I have seen a similar manifestation develop in one of Dr. Spiller's cases, where the growth was

of a different type, but here the change in the type of field, localizing in this instance, was brought about by dehydration. However, it is my impression that the majority of neurosurgeons do not regard this preoperative procedure with favor.

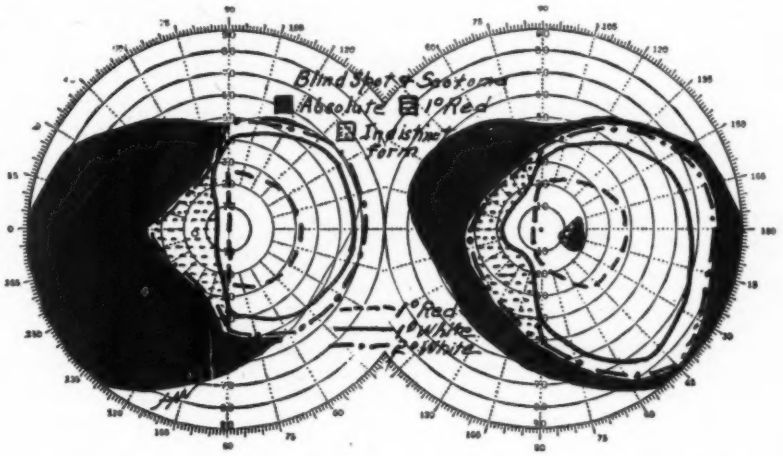

Fig. 10 (Holloway). Same case eight months after evacuation of cyst.

During the past three years, a few isolated cases of adamantinoma have been recorded which have not been included in the above series and one of these is of particular interest.

In 1933, Carson and Hellwig[7] recorded the history of a male child, aged five-and-a-half years, whose signs and symptoms when first observed were depreciation of vision, slight pallor of the discs, and probable right homonymous hemianopsia. Later investigations seemed to point to a left parietal-lobe lesion which was not confirmed at the time of operation. However, a needle through the parietal lobe did reveal a cyst containing a yellowish fluid. Following this, certain of the symptoms improved. Three months later, left-sided earache developed, followed by convulsions and death. The autopsy re-

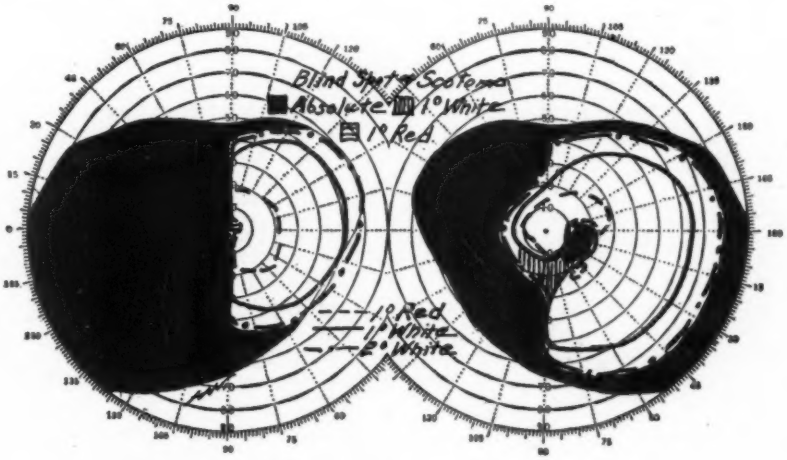

Fig. 11 (Holloway). Same case one year after.

vealed a suprasellar adamantinoma and a cystic astrocytoma of the left temporal lobe.

Carson and Hellwig refer to a number of instances in which multiple gliomas have been recorded, but the combination of two tumors of entirely different type occurring in childhood must be quite unique.

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BLEPHAROCHALASIS

Report of a case

BENNETT Y. ALVIS, M.D.
ST. LOUIS

The literature is summarized from the time of Beers to the present. A case is reported in which at operation note was made of a feature of the gross pathologic picture not previously described. The technic of the surgical correction is given and a histologic study of the tissue removed is reported. An extensive bibliography is appended. From the Department of Ophthalmology, Washington University School of Medicine. Read before the Section of Ophthalmology at the Eighty-fifth Annual Session of the American Medical Association, Cleveland, June 11, 1934.

Blepharochalasis is a rather rare condition characterized by chronic or recurring edema of the eyelids resulting in a laxity of the lid tissues with dilatation of the vessels, thinning, wrinkling, and discoloration of the skin, with finally a prolapse of orbital fat and the tear glands and a drooping of the lids. It is a bilateral disease of the upper lids. Most writers state that it is most common in girls at about the age of puberty.

The reported cases in the accompanying tabulation show equal numbers of males and females, five sixths of whom had the onset before the age of 20. There is no spontaneous recovery. The essential cause is unknown, and the only effective treatment is surgical correction of the deformity, though many other remedial measures have been tried, including radium, roentgen rays, cautery, introduction of setons, injection of astringent solutions, and general medical therapy.

It is my purpose in this paper to summarize an exhaustive study of the literature on this subject, to report a typical case with an observation not previously recorded, and to make available in American print a bibliography very nearly complete.

Literature

The first available mention of the condition was made by Beers in his textbook in 1807, in which he described "a not very frequent secondary result of eye inflammation . . . a striking relaxation and stretching of the general covering of the upper eyelids."

The next noteworthy contribution was that of Sichel, 1844, who differentiated three types of ptosis: "Le ptosis paralitique, ptosis atonique, et ptosis lipomateux." Concerning the second of these he gave a description of hanging, wrinkled folds of skin, and drooping lids, which may force the afflicted one to hold the head back; and stated that even when the lid cannot be raised one may detect the intended contraction of the levator under the skin. Confirmation of this fact by direct observation of the exposed muscles at operation is first

recorded in the present paper, so far as I have discovered in the available literature.

The third type he described as a modification of the second, in which there is a collection of orbital fat under the skin of the lid, which arrived there by penetrating the fibers of the orbicularis and which gives the lid an elastic feel and renders it difficult to raise.

Sichel mentioned that Dupuytren and even the Arabs, Rhozes, Avicanna, and Aboul Kasem had described this form of ptosis and had given the operation for it (Weinstein). Arlt, 1856, described both forms and the operation for ptosis adiposa. Hotz in 1880 published a case of ptosis atonica in a woman aged 35 years, and described his operation, which is similar to his operation for entropion. Golowin, 1895, reported a case in which the tear gland had prolapsed. His description is that of a case of ptosis adiposa.

Although these scattered expositions of the disease existed, some of them excellent, the condition was practically unknown to the profession, as Weinstein remarks, until Fuchs, in 1896, by his brilliant description and the force of his reputation made it known to all. He gave a classic description of the type Sichel had called ptosis atonica and proposed the name blepharochalasis, which has since been most commonly accepted. Fuchs presented one case which was similar to many he had seen and showed the pathologic changes in the excised tissue. He mentioned angioneurotic edema as a cause in some cases. His statement that the condition never interferes with the sight does not apply to all cases, for many have been reported in which the patients were forced to hold the head back, one even by Sichel fifty years before. Fuchs apparently erred in not recognizing the identity of his cases with those of Sichel and others.

During the next twelve years, many case reports were added, mostly in European literature. Loeser, 1908, reporting a case with palpable tear glands, carefully analyzed the typical cases previously described and concluded that the relaxation of the skin of the lid is the primary change and that at this stage the disease is blepharochalasis, as Fuchs described it. If the process goes on and involves the orbital fascia, resulting in prolapse of the fat and even of the tear glands, it becomes ptosis adiposa, or ptosis lipomateux, "fat hernia," as described by Schmidt-Rimpler, 1899. Weinstein in 1909 reviewed the literature to that date and reported one case in detail, giving a masterly discussion of the disease as revealed in the many articles and case reports reviewed by him. His conclusion agreed with those of Sichel and Loeser that ptosis atonica and ptosis adiposa are two forms of the same pathologic process, whose cause, he said, " is as little known, as it was one hundred years before in Beers' time." He suggested ptosis atrophica as a more fitting name.

Lambert, 1900, gave the first American case report, but Weidler, 1913, was the first in this country to make a comprehensive study of the literature, when he reported two cases with the histologic studies. Heckel, 1920, reported a unilateral case with exophthalmos. In 1920, Ascher observed two cases in which blepharochalasis was associated with edema of the mucous membrane of the upper lip (Doppellippe) and found six others in the case records of the Elschnig clinic at Prague. He found similar pathologic changes in the tissue removed from the lids and lips and noted evidence of associated thyroid disorder. He later saw four other cases with this combination. Laffer in America had reported a similar case in 1909. Friedenwald and Verhoeff, 1923, in a careful histopathologic study of tissue removed from a patient, found proliferation of the endothelial cells of the capillaries and small vessels, forming a syncytium about the vessels and new capillary formations.

Eigel, 1925, studied tissue from the lids, lips and skin of the arm of a patient having blepharochalasis and double lip, finding similar changes in all three places—suggesting that the entire body was fighting a general intoxication.

Benedict, 1926, reported three cases, one of ptosis atonica and two of ptosis

adiposa. Berens reported two cases that he had seen, and suggested an allergic reaction as the probable cause.

Michail, 1931, reported a case of unilateral blepharochalasis with amblyopia, high hyperopia, and other congenital defects of mesodermal origin of the same side. He found evidence of decreased sympathetic tonus, increased vagotonia, and masked hyperthyroidism. His patient suffered recurring attacks of edema, especially in the spring. He believes that these factors were underlying causes of the condition in his case and that they offer a suggestive basis for the study of possible etiologic conditions in other cases.

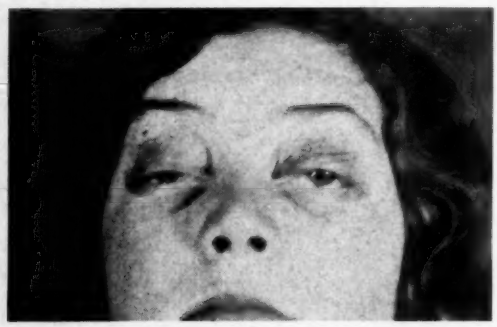


Fig. 1 (Alvis). Blepharochalasis. Atonic stage: drooping lids, wrinkled skin, elevated brows.

A Typical Case

A. M., a girl, aged 14 years, seen Dec. 30, 1932, complained of drooping of the upper lids, which covered the upper portion of the pupils and could be elevated only partially by the aid of the frontalis muscles. The skin of the lids was wrinkled, lax, and discolored a brownish red, due to pigment and visible blood vessels. The lax skin could be drawn far beyond the lid margins and showed little elasticity. The subcutaneous tissue had shrunken so that the lid area was depressed, the normal skin of the nose and brow being sharply limited and standing above the depressed lid area in a line that closely simulated a well-marked epicanthus, except that the inner canthus was not depressed but continuous with the normal skin level.

No lumps were palpable under the skin. On everting the lid a soft vascular mass of tissue filled the upper sulcus, resembling a hemangioma in appearance and texture.

The condition had come about from attacks of edema beginning at the age of 11 years, with the onset of puberty, recurring at irregular intervals of a few weeks or a few months, and lasting from one to three days each time. During the attack, the edematous skin was said to resemble bags of fluid, fullest at the inner canthi, involving also the inner parts of the lower lids.

Photographs of the patient in infancy and at the age of 8 years showed very wide-open eyes with no suggestion of ptosis.

She was in the Jewish Hospital for a period of four weeks, where she was thoroughly studied by the medical staff. Skin tests for food and other protein sensitization were carried out and some test diets tried. History of hives and of being sensitive to certain foods (prunes, peaches, cabbages, turnips, strawberries) strongly suggested allergy as a causative factor.

A study of the endocrine gland functions was made under direction of Dr. Louis Cohen. The basal metabolic rate averaged —20.7 percent. The palms were moist and there was emotional instability. The thyroid was somewhat enlarged. Dermographia was present. The periods have been regular since the age of 11 years.

The patient was mentally bright and made excellent progress in school.

The results of general physical examination were normal except for the peculiar condition of the eyelids.

At operation under local anesthesia, an elliptic strip of skin and subcutaneous tissue, from 5 mm. to 7 mm. broad, was excised, following the upper skin fold and leaving a 4-mm. margin of skin below. When this tissue had been removed it was observed that the levator palpebrae superioris acted freely on voluntary attempts to open the lid but its tendinous attachment to the tarsus was so lax that the latter was not moved appreciably. If this phenomenon has been observed previously at operation, I have found no statement to that effect in the available literature, though Sichel, 1844, noted the basic fact, as detected by palpation through the skin.

Closure was made by five sutures in each lid, laid as follows: first, through the lower skin margin, then through the upper border

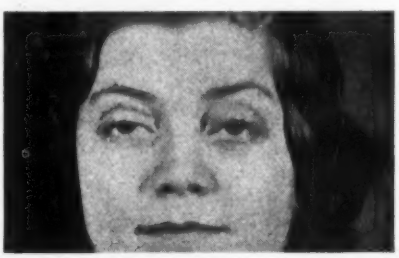


Fig 2 (Alvis). Blepharochalasis. Appearance six months after operation.

of the tarsus, next the tendon of the levator, about 5 mm. above the tarsus, then out through the upper skin margin. When tied, the effect produced was closure of the skin wound, attachment of the skin to the upper tarsal margin, and a fold or tuck shortening the levator tendon, elevating the lid. Healing was prompt and the cosmetic result good.

There was considerable edema of the conjunctiva of the right eye, causing a fold to appear everting the inner part of the lid. This was finally reduced by multiple punctures with the electric cautery. The pathologic report of the excised tissue by Dr. S. H. Gray follows:

"The epidermis has a moderate number of papillae. There are many small accumulations of round cells just beneath the epidermis, outside or beneath the external membranes of the sebaceous glands, near the hair follicles, and some around the capillaries. The vessels are markedly congested. Weigert stain reveals marked diminution of fine elastic-tissue network."

General Summary

Name. Of the multitude of descriptive names employed by various writers, blepharochalasis (Fuchs) or ptosis atrophica (Weinstein) seems best to accord with the essential conditions of the disease.

Definition. Blepharochalasis, or ptosis atrophica, is a disease of the upper eyelids, characterized by atrophy and relaxation of the skin and supporting tissues of the eyelids, and due to chronic or recurring edema of the anterior orbital structures.

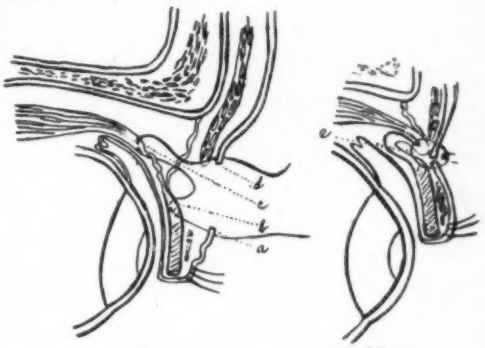
Etiology. The essential underlying cause is unknown. The edema and the tissue atrophy go hand in hand. Sympathetic atonia or increased parasympathetic tonus associated with masked endocrine disorders (Michail, Ascher) seems to be closely associated if not actually the causative factors. The attacks of acute, recurring edema are identified by many observers as angioneurotic edemas, but the cause is not identified by that designation.

The description of many cases suggests sensitization as the exciting cause, as proposed by Berens.

A study of the reported cases shows that about half of the patients are seen between the ages of 10 and 20 years, a third between the ages of 20 and 40, and the remainder older or younger, about equally divided. The onset occurs before the age of 10 in a third, and between the ages of 10 and 20 in half of the cases reported.

The great majority of patients are of the white race, only a few being Negroes.

Attacks of weeping, straining, weakening diseases, nervous crises, and so on have been reported as setting up the initial attack. The development of the disorder along with the beginning of puberty and adolescence in so many cases is probably more than a coincidence.



I. II.

Fig. 3 (Alvis). Diagram showing placing of suture: *a*, through lower skin margin; *b*, into upper tarsal margin; *c*, into levator tendon; *d*, out through upper edge of skin wound and fibers of orbital septum; *e*, loosely drawn together.

Course. The first sign is the painless swelling (edema) of the upper lids, usually bilateral and symmetrical. This edema may persist without marked diminution for years. More often the swelling recedes and recurs periodically. In the interim the skin takes on the flabby, wrinkled, discolored appearance characteristic of the disease, while the subcutaneous tissue diminishes in bulk and elasticity. The folds of skin hang loosely over the lid margins and the movements of the lid may be impaired. The veins and capillaries are dilated and proliferate in numbers. At this stage, ptosis atonica (Sichel) is an appropriate name. Further progress results in relaxation of the supporting tissues of the orbital septum, the fascial connections of the tendon of the levator with skin, the tarsus, and the orbital structures. There is prolapse of fat between the fascial strands and of the tear glands to a position below the orbital ridge. The lid skin now hangs in a full, heavy, transverse fold, weighting the lid down and narrowing the fissure. This is what many authors call the ptosis adiposa or fat hernia.

Pathologic changes. The numerous

Author	Year	No. of Cases	Age When Seen	Age of Onset	Sex	Type of Case	Contribution
Beer.....	1807	..	..	..	..	.....	Description in textbook
Himly.....	1843	..	..	..	..	.....	Name—proptosis
Sichel.....	1844	..	..	..	..	.....	Description of two types of ptosis—atonique and lipomateux—as forms of some disease
Mackenzie....	1854	..	..	..	..	.....	Described atonic form under name, ptosis from hypertrophy
Arlt.....	1874	..	..	..	..	.....	Description in Handbuch
Hotz.....	1880	1	35	27	♀	Ptosis atonica	Described case which came on after prolonged illness and weeping; described the Hotz operation
Golowin.....	1895	1	18	15	♂	Ptosis adiposa	Described condition as dislocation of tear glands
Fuchs.....	1896	1	20	16	♀	Ptosis atonica	Gave classic description of atonic type; suggested angioneurotic edema as cause; proposed name, blepharochalasis; stated he had seen numerous other cases; histopathologic changes
		1	..	..	♂		
		1	..	..	♂		
Lojetschnikow	1896 1902	1	..	..	♂	Ptosis adiposa	Called attention to dislocation of tear glands as feature of disease
Lodato.....	1898	1	..	..	..	.....?...	Found vasomotor disturbances with blepharochalasis
Fehr.....	1898	1	21	13	♀	Ptosis atonica	Histopathologic study of skin showing atrophy of all parts: papillae flat
Pick.....	1899	1	15	10	♂	Ptosis atonica	Case report
Schmidt-Rimpler	1899	1	19	16	♀	Ptosis adiposa	Called it fat hernia of upper eyelids
Rohmer.....	1900	4	10—	..	♀	Ptosis adiposa	Described operative treatment; histologic study; name—symmetrical angiomegaly of upper lids
Lambert.....	1900	1	19	13	♀	Ptosis adiposa	First American case report
Rosenstein....	1902	..	..	..	..	.....	Pathologic specimen
Dalèn.....	1902	1	12	..	♂	Ptosis atonica	
Shoemaker...	1904	1	19	..	♀	Ptosis adiposa	First case in Negro patient
Michel.....	1906	1	..	..	♀	.....	Unilateral case; suggested analogy to acrodermatitis progressiva atrophica
Scrini.....	1906	1	18	..	♂	Ptosis atonica	Prolapse of tear glands; name, dermatolysie palpebrale
Bach.....	1906	1	15	..	♀	Ptosis adiposa	Name—symmetrical lipomatosis
		1	..	..	♀		
		1	22	10	♀		
Wagenmann..	1907	1	16	..	♂	Ptosis adiposa	Called it lipomatous hypertrophy of subcutaneous tissue
Loeser.....	1908	1	13	7	♂	Ptosis adiposa	Analyzed literature; concluded ptosis atonica, ptosis adiposa, and fat hernia are different stages of same disease; suggested cause is neurotrophic
Laffer.....	1909	1	12	9	♂	Ptosis adiposa	Reported case with sudden onset with edema of upper lip and enlarged thyroid; second American case
Weinstein....	1909	1	21	15	♂	Ptosis atonica	Mentioned many cases seen in St. Petersburg clinic; reviewed literature from time of Beer, quoting extensively; comprehensive discussion; name—ptosis atrophica
Ayers.....	1913	1	19	6	♀		
Weideman....	1911	1	..	..	..	Ptosis adiposa	
Bresson.....	1913	..	..	..	..	.....	
Ginestrous....	1913	1	..	..	..	.....	Name—paupière en besace
Rollet et Genet	1913	1	..	..	..	Ptosis adiposa	Report of a case
Weidler.....	1913	1	16	14	♀	Ptosis atonica	First American review of subject;
		1	14	11	♀	Ptosis adiposa	reported two cases in emotional, neurotic patients

TABULATION OF LITERATURE—*Continued*

Author	Year	No. of Cases	Age When Seen	Age of Onset	Sex	Type of Case	Contribution
Kagoshima...	1914	2	..	..	..	.....	In Japanese; report of two cases with pathologic study
Stieren.....	1914	1	19	7	♀	Ptosis adiposa	Suggested sympathetic nervous system disturbances
		1	14	11	♀	Ptosis adiposa	
Jenisen.....	1915	1	13	10	♂	Ptosis atonica	Report of a case sensitive to potassium iodide and with psychic defect
Randolph....	1916	1	16	6	♀	Ptosis adiposa	Reported case with attacks of swelling and itching, which suggest allergy
Heckel.....	1920	1	19	14	♀	Ptosis adiposa	Described study of tissue; unilateral case, right side with exophthalmos
Ascher.....	1920	1	17	6	♀	.....	Reported two cases in detail, and six other case records from Elschnig clinic, all with associated double lip; most showing evidence of struma; histologic study of tissue from lids and lips show similar changes; estimated frequency as 1:10,000 cases
		1	18	6	♀		
		1	17	14	♂		
		1	18	15	♀		
		1	23	..	♂		
		1	30	..	♂		
		1	72	..	♂		
		1	22	..	♂		
Schreiber.....	1920	1	51	50	♀	Ptosis atonica	Reported case of blepharochalasis associated with folds of conjunctiva
Wirth.....	1920	1	32	1	♂	Ptosis adiposa	Reported case presenting double lip since birth; no struma; tissue from lip suggests Mikulicz's disease
Weve.....	1921	1	27	4	♂	Ptosis adiposa	Case with double lip
Verhoeff and Friedenwald	1922	1	20	17	♀	Ptosis atonica	Pathologic study showed vessels increased in number with endothelial-cell proliferation in and around the capillaries
Ascher.....	1922	1	16	12	♀	Ptosis adiposa	Had seen 12 cases, 9 typical, with double lip; four presented struma; 3 enlarged thyroids; suggested thyroid disturbance as possible cause
		11	39	30?	♀	Ptosis atonica	
Friedenwald..	1923	1	50	40	♂	Ptosis atonica	Pathologic study from case in a Negro
Eigel.....	1925	1	..	10	♂	Ptosis adiposa	Case of double lip; infantile; mild struma, studied skin sections from lip and arm; believes endocrine disturbance basis of edema
Accardi.....	1925	1	22	..	♀	Ptosis atonica	Extensive bibliography; histopathologic study
Benedict.....	1925	1	19	11	♀	Ptosis atonica	Enlarged thyroid, one case; one case in Negro boy; medical measures, salt-free diet unavailing
		1	28	12	♀	Ptosis adiposa	
		1	13	11	♂	Ptosis adiposa	
Autier.....	1926	1	..	..	..	.....	Paris thesis
Gieseroff.....	1926	..	..	..	..	.....	Gave operative technic
Berens.....	1926	1	26	..	♂	Ptosis atonica	Believes condition allergic in origin
		1	37	4	♂	Ptosis atonica	
Feig.....	1926	1	19	18	♂	Ptosis atonica	Estimated frequency 1 case in 20,000
Cavaniglia....	1929	1	..	..	..	.....	Report of a case
Kreiker.....	1929	..	..	..	..	.....	Described operation
Stein.....	1930	1	40	..	♂	Ptosis atonica	In these cases lower lids also involved; observed weakening of fascia of levator; histologic study
		1	38	20	♂	Ptosis atonica	
Michail.....	1931	1	21	3	♂	Ptosis adiposa	Reported unilateral case with congenital deformities of the eye; analyzed case, suggested process is chronic proliferative, exudative inflammation with atrophy of epithelial layers; underlying cause instability of peripheral circulation, disturbed vegetative tonus, and masked hyperthyroidism

pathologic reports vary somewhat, no one showing all the reported observations. The skin is thinned and atrophic, showing diminution in all its layers. The stratum spinosum is poorly defined or even absent. The basal-cell layer is often pigmented. The processes normally sent down from the epidermis to the deeper layers are diminished or absent. The lymph spaces of the cutis are enlarged.

There is loss of elastic tissue.

The vascular supply is increased as to both size and number of vessels. Proliferation of the endothelial lining of the capillaries has been noted with cell groups about the vessels and new-vessel formation.

Infiltration by groups of round cells, especially about the glands and hair follicles, as evidence of low-grade inflammation is often found.

Diagnosis. The characteristic appearance of a well-developed case renders the diagnosis easy and certain for any one who has seen such cases previously.

Differential diagnosis. Elephantiasis of the lids, lymphangioma of the lids, plexiform neurofibroma, ptosis adiposa of the aged, and Mikulicz's disease are conditions that may present a similar appearance. Ptosis amyotropica (Fuchs), found in elderly persons, is somewhat similar.

Treatment. Surgical correction of the deformity has alone been successful.

The principles of the operative procedure as described by Hotz, Rohmer, Blaskowicz and others are:

1. Excision of a sufficient expanse of the flabby skin with removal of prolapsed fat and tear glands when present.
2. Attachment of the lower skin margin to the anterior surface of the tarsus.
3. Shortening of the relaxed levator tendon if necessary.
4. Reinforcement of the separated and stretched tissues of the septum orbitalis by supporting sutures to the periorbita.

Many other remedial processes have been tried including radiation, injection of astringents, introduction of setons and general medical treatment, but none has proved helpful.

If the attacks of edema continue to recur, the results of surgery, though good at first, may not be permanent.

In the accompanying table, writers on this subject are given in chronological order with the year their articles appeared, the number of cases, the age of the patient when seen, and the age of onset, the sex, and the type of case (ptosis atonica or ptosis adiposa). The principal contribution of the article is briefly in the last column.

A summary of the table shows exactly equal numbers of males and females. Eighteen, or one third, of the cases began under the age of 10 years. Twenty-eight, or one half, between the ages of 11 and 20, and only five began after the age of 20.

Thirty, or one half, were first seen in the second decade, seventeen, or one third, in the third decade, five earlier, and three later.

The adipose type is slightly more frequent than the atonic (4:3).

308 North Sixth Street.

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CONCERNING THE TECHNIC OF MULTIPLE MICROPUNCTURE FOR THE TREATMENT OF SEPARATED RETINA

Additional Devices

CLIFFORD B. WALKER, M.D.
LOS ANGELES, CALIFORNIA

Single micropins of 20-percent iridium-platinum were found to be more satisfactory without insulation, because they could be cleaned by heating briefly to redness in alcohol or Bunsen flame.

Different methods of mounting pins for greater facility are illustrated and the author explains how the threads can be removed from the field by cutting them off (after the pin is inserted) next to a knot placed close to the eyelet or by use of an accessory running thread through the eyelets. Threads are then cut off close to this knot, which is left as a marker to reduce the risk of loss.

Two new styles of micropins for use with a special modification of Beaupré forceps are described. These are shaped to receive rubber tubing as easily replaceable insulation at the tips, as compared with enamel coatings. The grid pin has three vertical bars of wire above the cross-bar stop and gives a large grasping surface for forceps. The ring-stop pin has soldered onto it a ring of fine platinum wire at the stopping point, 1.5 or 1.75 mm. from the penetrating tip.

Accessories for localization of tears have been refined to the point where they are now exhibited and made available. A phantom manikin for this purpose is described together with the method of use.

All instruments herein described were made with the cooperation of, and are obtainable from the U. S. Optical Co., 671 South Anderson Street, Los Angeles, California.

From the Ophthalmological Department of the University of Southern California. Presented before the Section on Ophthalmology, American Medical Association, at Cleveland, June 12, 1934.

In the previous communication on this subject[1] it was stated that the use of insulating material on micropins or needles had certain disadvantages. For instance, practically none of the insulating materials can be cleaned by heating to redness in the Bunsen flame, because it either chips off, bends, or breaks; and the pin, especially if made of steel or zinc, will oxidize or lose its temper. Neither is acid a satisfactory agent for cleansing the rather hard shell of coagulum which encases the micropin after it has been used. This shell has insulating properties to a greater or less degree, and should the pin be applied again would not only retard penetration of the sclera but also modify the amount of current employed, unless it had been carefully scraped with a knife until the bright metal appeared. Even then it would be easy to leave a strip of untouched coagulum on the tiny shaft. Scraping, moreover, often dulls the needle or bends its sharp tip. This is especially true when multiple needles are used. Steel pins will rust and oxidize unless carefully handled.

The slitlamp shows that pins insulated at the hilt with either enamel or lacquer will allow a certain amount of crazing to take place as the insulation thins out around the bare projection of the needle; dirt accumulates and later fragmentation occurs, especially after repeated use and sterilization. The subconjunctival spaces may not tolerate much of this detritus without considerable reaction and chemosis.

It is not necessary to subject the tissues to this handicap. If pins are used made of 20-percent iridium platinum, with no insulation but merely platinum stops of smallest possible size, every part is rapidly and perfectly cleansed by heating to redness (strung on fine platinum or other heat-resisting wire) in the Bunsen, alcohol, or gas-grate flame. Where there is no insulation to be damaged, neither temper nor sharpness is lost, nor is there threat of oxidation or possible siderosis. If thus cleansed after each operation, the dosage and penetration are dependable and uniform, and the color changes of coagulation, visible.

That insulation of micropin stops, if these are small, is unnecessary, both clinical cures and observation of animal eyes in the laboratory, as well as mathe-

matical demonstration have indicated. But an insulated pin even if new and applied for the first time is at a disadvantage because of the added bulk and consequent lowering of scleral visibility. Whatever possible convenience its use may entail, it is not equal to that of cleansing in a flame and ensuring uniform performance at the next operation.

As the narrow stop or coil of the pin comes down upon the sclera, an additional amount of amperage according to its contact area is indicated on the meter. This, however, does not add to the dose already on the pin shaft inside the eye, but to the scleral surface, so that a partial beveling of coagulation is formed at the top of the puncture. This is not without benefit. It may, in fact, give a mild Venturi-tube effect and thus prolong drainage. If during this procedure the surface of another pin is accidentally touched, for an instant, forming a very tiny arc, observation within the eye at the same time shows, as in the previous case, but little reduction of the dose, since the additional area is very small, while the neighboring pin is so poorly and briefly contacted, as a rule, that the effect on it is negligible. If, however, this happens during scleral penetration, a slight tilting or readjustment of the pin, preventing the arc, will make penetration easier; but no damage is done in any event.

The distraction of having to watch the meter continuously is eliminated. After the low key has been used to check the setting of the control dial, to give just about 40 M.A. to the microtip when its shaft is penetrating the sclera, the routine work may be done on high meter without risk of injury to the fuse or to the meter in case the tip accidentally touches a large metal piece, such as an uninsulated retractor or speculum. This method is so satisfactory that I do not require insulation of retractors, since with single pins the only result of touching them is for the instant to lose the current; no trouble results to either patient or meter. With uniformly clean and sharp iridium-platinum micropins at each operation, one soon "feels" quite accurately the strength of current on the microtip, just as one "feels" the sharpness of the cataract knife. Thus I have found that it takes very little longer to use single platinum pins (one dozen pins are easily placed on a clear, scleral stretch in one or two minutes) as compared with multiple insulated pins, and such time is more than regained when it comes to removing, cleaning, remounting, and maintaining a uniform tip, both as regards sharpness and electrical conductivity. When more than one pin is used, the problem of insulation and cleanliness becomes even more acute, because heavier currents are used, increasing almost proportionately with the number of pins.

It must be noted also that the visibility of the actual performance of the micropins that I have just described is very high. The behavior of the penetrating pin and of the electric current on it is not hidden from view by a relatively large shoulder designed to support insulation.

The single oval coil micropin with individual threads may be mounted for use in a variety of ways, only one of which, the plain thin-gauze mounting, was shown in the previous paper[1]. The gauze is now used, however, in four or more layers and mounted straight between cardboards instead of in bottles, which curl up the threads unnecessarily. Also threading into the gauze is done so that the microtip does not have to change its position on the thread. Since the pin now has a fixed position, a knot is also put close to the eyelet* so that after the pin is placed in the sclera the threads may be cut off short, the black knot being left as a marker to reduce the possibility of losing the pin, if reasonable care is used (figs. 1 and 2). Although this arrangement has been the most popular, there are some who find difficulty not only with the number of threads but also with holding the thread easily, as previously described,

[1] Walker, C. B. Amer. Jour. Ophth., 1934, January, v. 17, p. 1.

* Recently the eyelets have been platinum soldered to the coil instead of tucked in so that they stand a great strain without opening.

or for one reason or another prefer a different method, as described below.

First, in order to handle the individual threads more easily and to discard them as fast as the pins are set, the following arrangement is possible, as shown in figure 2: Matrix cork is used to receive the microtips inserted in a row at the beveled (45-degree slant) end, while at the other end narrow grooves are cut with a razor blade. In these cuts, which open up easily on the cork not only acts as a carrier but also as a good practicing and demonstrating device at any time.

This arrangement also makes it possible to cut off and eliminate the individual threads entirely if they become bothersome, as fast as the pins are coagulated into the sclera. To do this, a running thread of black (if the individual threads are white) is threaded with a beading or Carrel needle continuously through the eyelets as they

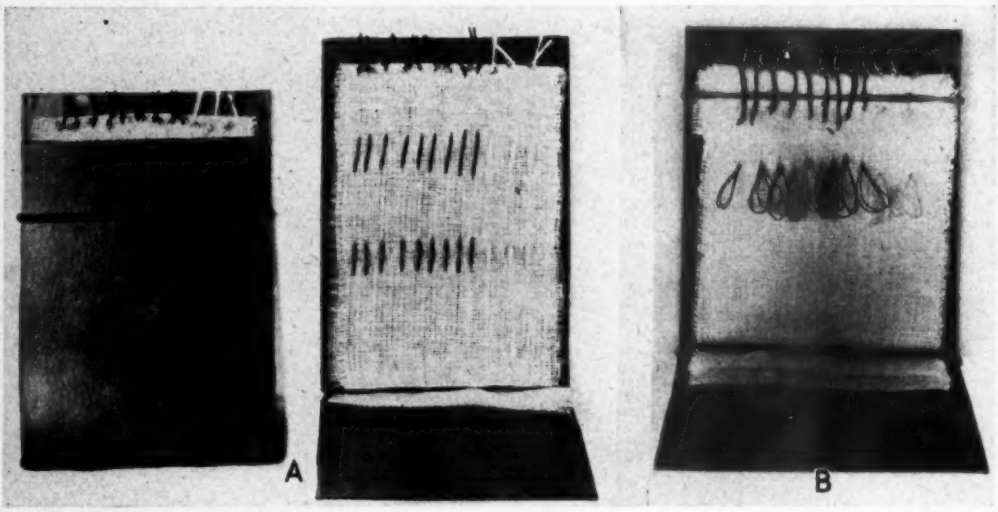

Fig. 1 (Walker). A, new method of mounting micropins in stiff stencil-board covers to keep threads free of curling. Gauze arranged in two layers. More layers of gauze facilitate arranging pins in very uniform rows. B, threads doubled and drawn into four to six layers of gauze, which holds pins more uniformly. Pins are quickly delivered either by putting stylus in coil and pushing pin out or by pulling on knotted end. By these arrangements pins are free of any cork or glue particles and are fully exposed to the heat while in the sterilizer. An additional knot close to the pin makes it possible to cut the threads off one-half inch from the pin after it is firm in the sclera, thus clearing the field of too many threads, yet leaving a marker on the pin.

slightly bending the cork slab, the knotted end of the individual threads is caught. In this way they are held straight, and it is not necessary to run the micropin the length of the thread before placing on the stylus. One simply lifts the individual thread out of its slot, places the stylus in the coil, and, after lifting the pin out of the cork, transfers it to the sclera. The lifting force required to remove the pin from the cork is equal to about six ounces of tension and is a rather close approximation of the force used to press the pin into the sclera and remove it, so that stand in line at the end of the cork block. This accessory thread is about 8 inches long and has a bead at both ends as a marker and to prevent the loss of any micropins.

To prevent this thread from being able to lead off any appreciable amount of current when wet with serum, it is oiled just before using with a cotton tip dipped in alboline. As the pins slide along this running thread no effort is made, as a rule, to take up whatever slack occurs until all the pins (one dozen) on one running thread are set. Finally, then, only two threads are left

leading from the barrage line. Since it often requires about two dozen pins, 2 mm. apart, to complete the average outer barrage, there will be only four threads from this part of the field. It is only in case of multiple holes requiring more extensive work (in one operation 75 pins were used successfully, to close nine holes distributed over three quadrants) that I have found the running thread at all necessary, and therefore it is usually cut and discarded instead of the individual threads.

For convenience, each package contains, as a rule, a row of one dozen micropins threaded on individual threads and also on a running thread perhaps of different color. Three of the pins have white threads for land-marking and the rest are threaded with

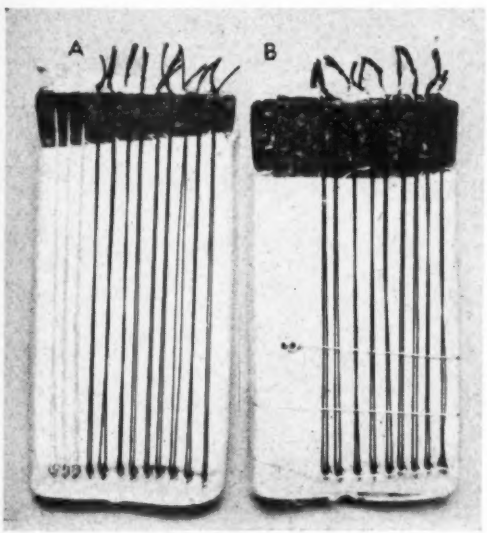

Fig. 2 (Walker). Mounted on cloth-covered matrix cork (A) with individual thread only; B, with both individual threads and running thread.

black. The cork block may or may not be provided with a white broadcloth covering pinned in position with tabs projecting at each end for towel clips, in case it is desired to fix the block to the drapings. This set is now encased in double cellophane bags, permitting not only instantaneous inspection at any time, but also sterilization in autoclave or in dry heat up to 350°F. for one hour or more without any deterioration. At over 400° and up to 450°F., however, the cellophane seams slip a little without opening, and the cellophane becomes brittle but does not crack until opened. All that is necessary for thorough sterilization is 162°F. for one hour, perhaps, on two occasions. However, as a matter of fact, I usually let the temperature run at 300°, since it does this set no harm, and because I am sure the slightest mild infection, even

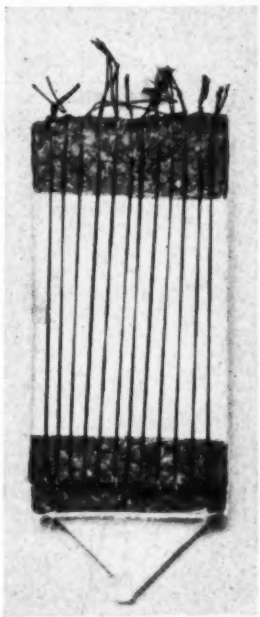

Fig. 3 (Walker). Micropin shaft mounted free, in end trench made by slotting cork to give maximum exposure to heat during sterilization, at same time avoiding possible adhesion of cork or glue to pinshaft.

by germs of low virulence, which increases the chemotic reaction, contributes to poor results. This fact calls for a most elaborate cleansing of the patient's face, lids, and conjunctiva, and the use of rubber gloves by all the members of the operative team. A small electric fireless cooker with thermometer attached has given excellent service, not only for pins but also for handles, electric cords, and instruments. A reliable thermostatically controlled kitchen oven may also be used for the whole set. Figure 3 shows a cork mounting of the pins in which the points are not set into the cork at all.

This insures a cleaner and more thoroughly sterilized pin, because, obviously, there is not a chance for cork or glue to stick to it or protect it from the heat of the sterilizer. In addition to

Fig. 4 (Walker). Mounting on cork, running thread only. Tweezers (fig. 7) used with this arrangement. Stylus cannot be used without addition of individual threads.

dry heat, which I prefer, the autoclave, steam, boiling, or alcohol soak, followed by drying, can also be used with or without the cellophane covering.

While the stylus handle* has a certain advantage because it provides the maximum insulation in the minimum space or bulk, and does not require the use of rubber gloves, yet if somewhat

Fig. 5 (Walker). Tweezers fitting the stylus chuck and handle when individual threads are not desired.

less insulation is tolerated the coil pins may be handled with a variety of tweezers or forceps, without using the individual threads but only the running thread. A shorter form of matrix cork block with trench to protect the pins may be substituted (fig. 4). It is necessary to make only one prong of the tweezers fit into the coil; the other clamps against the outside of the coil. Such a forcep, which will fit into the handle in place of the stylus, is shown in figure 5. As far as insulation is concerned, it is not necessary to use rubber gloves with this form, and even the running thread may be omitted if one is bold enough to think he will never lose or overlook a pin either in the orbit or elsewhere. Either size of coil micropin is handled equally well with these forceps.

Tweezers of the type shown in figures 6 and 7 will also handle this pin easily, although rubber gloves must be worn at least on one hand, unless the tweezers are carefully wrapped with rubber tape or stocking or painted with insulating lacquers or enamel, all of which are short lived in repeated sterilization processes. However, it is very

Fig. 6 (Walker). Tweezers with swivel connection. May be used with either coil or grid pins if gloves are worn.

easy to slip close-fitting thread-rubber tubing over the specially shaped tips of these instruments, so that the distal half or three quarters of an inch is insulated with easily renewable material, thus preventing leakage of current onto sclera or neighboring pins or instruments, in case of accidental touching. A swivel-joint connection was tried in the instrument pictured in figure 6, to release any slight twist in the cord, but this is not necessary; so that altogether

Fig. 7 (Walker). Stronger forceps insulated at the distal end for handling coil or grid pins. At least one glove must be worn. This is modified from the Beaupré type of cilia forceps.

the model shown in figure 7 is the most practical, and mechanically, somewhat stronger and firmer in grasping. Of course, it must be remembered that this latter instrument has a joint which must be kept in good condition with occasional oiling, in order to get unhampered action from the spring handle blades. It is then a very fast-working instrument, and will handle either straight, coil, or grid pins equally well.

* The bakelite handle for the stylus has been further improved by a milled surface to prevent its slipping in gloved fingers and a row of dots on both sides of the tapering end to indicate at a glance the position of axis of the oval or rectangular stylus.

When using coil pins or quill tips, one blade tip is shaped to slip inside the coil, just as if it were a stylus, and the other blade is closed on the outside of the coil. Individual or running threads may be used as before for markers or locators, but if one wishes to get along without these he may do so by carefully keeping the count.

Thus, if the surgeon uses rubber gloves it is possible to avoid the use of the stylus handle entirely and work a little faster by changing to what I have called the grid pin shown in figure 10. This pin offers three vertical bars of the wire metal in the same plane (1-sq. mm. area) for the grid or grasping surface of the tweezers or forceps (fig. 11). Also, there are horizontal cross bars above and below, which prevent the forceps tip from traveling up or down on the pin, thus fitting so as to prevent

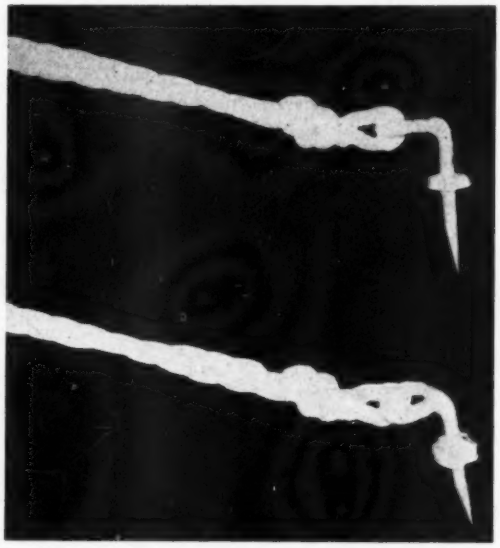

Fig. 8 (Walker). Ring-stop micropins projecting 1 mm. or less above the sclera. Still smaller segments of a ring (⅛ mm. to ¼ mm.) give satisfactory stopping but with a little more intense scleral effect at that point.

any wobbling. In addition, an eyelet for knotted-thread attachment is formed at the top. This pin may be still further narrowed and shortened by the use of a ring stop of very fine (.007-in.) platinum wire and platinum soldering (which will, if the 1300° grade is used, resist perfectly the Bunsen burner heat) as shown in figure 8. This ring stop, which can be reduced to just a segment 1/5 of the ring on only one side of the pin, represents, perhaps, the smallest possible micro-device with safety features, so that when the thread is cut off at the eyelet knot, the globe may be most freely rotated for frequent

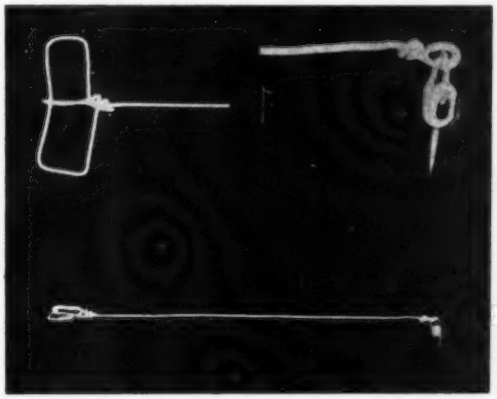

Fig. 9 (Walker). Short, 0.5 to 1 mm., micropins with heat-resisting wire "thread," permitting rapid, multiple, choroidal spot coagulation without necessity of leaving pin in situ because of leakage. Alcohol flaming on operating table used to keep stylus free of coagulum and with uniform electric characteristics. Fingertip control. Pin pushed forward on stylus handle to disengage and flame.

ophthalmoscopic examination without fear of dislodging any pin well set by coagulation. The degree of coagulation is easily observable, since it is not hidden by large dark shoulders, necessary to support insulation. If no thread is used, the eyelet may be made straight up from the stop and used as a forceps hold. I have had pins of this type made for Dr. Dohrmann Pischel of San Francisco, and he has used them successfully. I have also made pins in the form of a collapsed staple, with or without thread eyelet at the top. One leg of the staple is longer and sharpened and the other is short and blunt acting as a stop. The difference in length represents the effective micropin length. The two legs are soldered together and form the gripping surface for the forceps. If the eyelet is used, it may be turned over as in figure 8 to reduce length, while the blunt-stop end may be widened by

crushing until it prevents the forceps from slipping downward in the same way that the turned eyelet prevents it from slipping upward.

It must be noted that when pins are finally resharpened until they are only 0.5 to 1 mm. long, they are still valuable to coagulate the choroid over flat detachments or marginal areas where choroiditis more than drainage is desired, for fear of putting a new hole in the retina at the same time. While I have seen such a hole heal and seclude properly, yet at the periphery of the barrage circle, in case of improper treatment, it is possible for subretinal leakage to occur through such a hole and possibly account for a neighboring detachment, perhaps extending into the other half of the eyeball. If long pins are used in such areas they should be passed slantingly through the sclera so as scarcely to pierce the choroid.

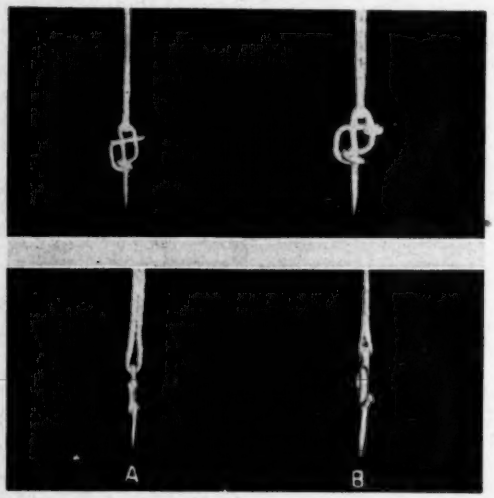

Fig. 10 (Walker). Front and side view of (A) small and (B) large grid pins. The eyelet on this pin does not have to be platinum soldered as on the coil pins. Very sturdy construction.

Also, such a short pin (0.5 mm. to 0.75 mm. in length) may be used rapidly and repeatedly over a large area of flat retina, if a heat-resisting wire is substituted for the thread as in figure 9. It can be frequently cleaned by removing and heating to redness in an alcohol flame, as soon as it shows the effect of a coagulation coating, or if it gets too wet. One of these short (0.5 mm.) pins also makes a much better marker than any of the inks or dyes which have such a strong tendency to blot and run on the damp sclera. The short pin makes a nice black dot, if the current is turned on just before it touches the sclera, without any risk of perforation and leakage, and gives some treatment at the same time. I think that it is just as important to outline with such a device the carefully measured boundaries outside of which a long pin (1.8 mm.) should not be used without slanting for fear of retinal damage, as it is to be sure the tear or tears occupy a symmetrical position within the barraged area. Without zoning precautions of this sort it is quite easy, on a spherical surface, to get the barrage actually laid far differently from what was planned.

Another device that can be strongly recommended is a narrow bakelite or hard-rubber suction dissector and retractor. Various metal suction dissectors have been made for me since 1918.

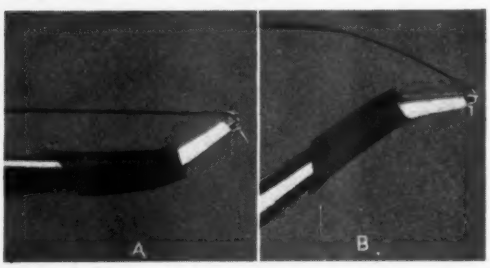

Fig. 11 (Walker). Grid pin may be held in modified cilia forceps in either position A or B. Thread may be held taut as in A, or by letting it trail (B), it will merely act as a finder or marker which may be reduced to any desired length by knotting close to the pin. Rubber gloves should be worn. This is a very satisfactory rapid combination.

But it is not necessary to get a special instrument, since a few hard-rubber eustachian catheters will serve*. If a strong suction is available with these, an assistant operator can most rapidly keep the barrage segment properly dry

* The tip should be notched a little to admit a little air at all times and a sterile glass of water should be available to wash out the tube and prevent any blood-clot formation.

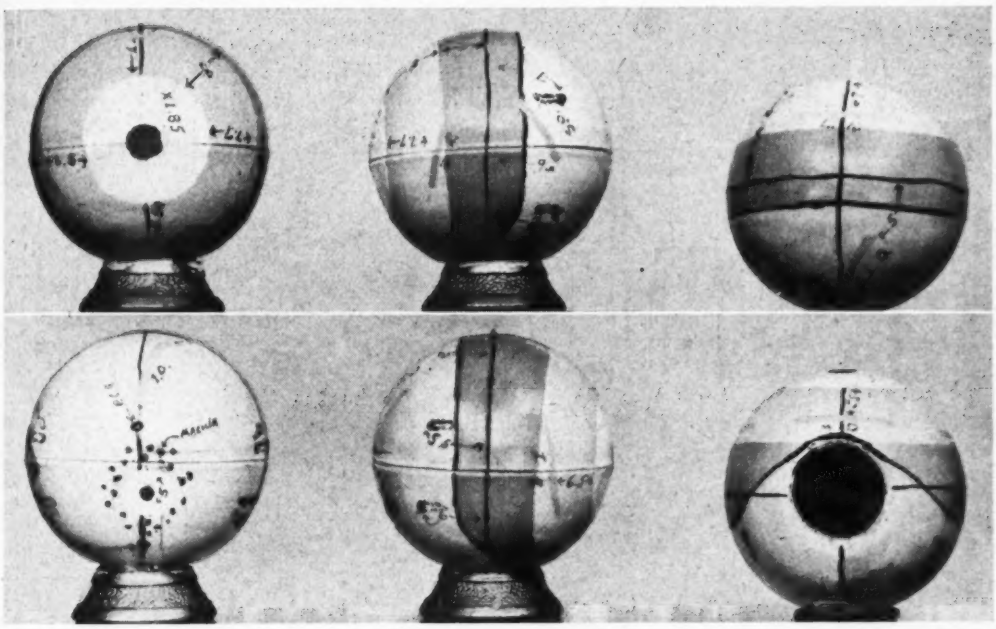

Fig. 12 (Walker). Exterior views (right eye) of inexpensive phantom manikin show to scale × 1.85 location of most important structures, hand painted in five lacquered colors. Showing extent of blind and seeing retina (visual field) with respect to sclera, also to venae vorticae, ciliary vessels, and muscles. Pedestal placed on median side, most barren of landmarks. Both optic and geometric axes in relation to maculae and optic nerve on posterior side.

and at the same time use the curved portion as a mild retractor to keep sagging folds away from the active microdevices. It serves to the greatest advantage in operations on very soft eyes. Then the adrenalin content of injections may have to be greatly reduced or entirely omitted, yet suction, without jabbing the eye with mops and perhaps leaving lint behind, will keep the field properly dry for micropuncture work in spite of considerable bleeding. It is disagreeable in many ways to work on a soft eye. It is dangerous to use very much counterpressure in such cases to bring up the tension, not only because of the possibility of hemorrhages and dislocations, but also because of the risk of bringing the retina too close to the choroid where it may be injured by a long pin.

A consideration of the hydrostatics at the conclusion of the micropuncture operation and the immediately subsequent ocular reactions in twenty-four cases, has recently given me the impres-

Fig. 13 (Walker). Phantom manikin opened to show strip of retina, imitated with black-margined cellophane, adjustable by means of black tension threads to reproduce the elevation of the retina as determined by the ophthalmoscope. Tear is inked on cellophane in field position as seen by the ophthalmoscope. When released, a fairly correct measurement of the scleral position of the tear is obtained, often eliminating an error of 10 to 20 degrees.

sion that because of the liability of micropuncture backflow, the bacterial flora of the lacrimal sac and conjunctiva should be studied in smear and culture, that, probably always, dehydration is detrimental so far as encouraging the necessary vitreous turgescence is concerned; that the canthotomy, muscle, and running conjunctival stitches should not be too tightly closed; and that the dressing should be gauged to give a pressure on the soft eye of not more than normal ocular tension, a light metal shield being used which will transmit all extra pressures well onto the rim of the orbit and surrounding bony parts.

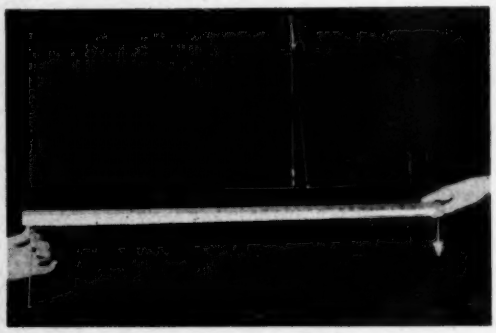

Fig. 14 (Walker). Localization attachment for Friedenwald or any ophthalmoscope showing tests for accurate alignment. Each of the three strings passes through a 2-inch glass tube pointer before reaching the tension weight where all are adjustable by three set screws. Alignment with the beam of the slit ophthalmoscope is thus easily effected.

Fig. 15 (Walker). Using the localizer on the tangent screen. Eccentric fixation is used, often with the other eye, and often along the meridian of the tear in order to bring the tear localization near the center of the screen. This method of carrying out retinal-tear localization as described by Cowan and previously by von Imre has proved rapid and accurate for micropuncture work.

At the moment all the micropins have been removed and the subretinal fluid has freely escaped, the intraocular pressure drops close to zero or atmospheric pressure. I have never found the field of scleral operation perfectly sterile at this stage, when cultures were made after perhaps one or two hours of manipulation, unless strong antiseptics (really too strong) have just been used. As closure of the wound is made, there is a stage when fluid pressure on each side of the micropuncture sieve must be so nearly equal that fluids could momentarily eddy back and forth through the sclera and choroid if outside pressure variations, due to restlessness of the patient, were such as to be transmitted to the globe. Fine eddy movements, due to pulse or respiration, are doubtless uncontrollable without dangerous pressure. A few very ordinary germs, perhaps expressed from the lacrimal sac or massaged by retractors from lid glands, might thus be aided in finding their way into the succulent culture media of the intraocular tissues that have just been traumatized and reduced below par in resistance, not only because of the coagulation treatment but also on account of the closure of many venous, lymphatic, and nutritional channels. Therefore, every encouragement toward a continuous outward flow through the micropunctures should be carried out, and the presence of every possible germ should be combated in order to improve our percentage of cures.

In addition to a most thorough cleaning and scrubbing of lid margins, clipping the lashes very short and painting with benzine and 5-percent tincture of iodine, I use a prolonged irrigation of the conjunctival and lacrimal sac with a 1/10,000 mercuric-oxycyanide solution. If any break in asepsis is suspected during the operation, then just before

the micropins are removed I have irrigated the field, except when open scleral punctures have been made, with a 1/10,000 oxycyanide solution, or lightly treated with a 5-percent tincture of iodine solution and, finally, thoroughly irrigated it with boric acid or neutral normal saline solution. Thus, in general, I have been forced to believe that the preoperative preparation and draping should be even better than for a cataract or glaucoma operation, because of the greater duration and traumatism of the operation and because the posterior chamber of the eye does not tolerate and maintain transparency with low-grade infection so well as the anterior chamber. Because of the numerous tension sutures extending in different directions, thin gauze drapes over the nose and mouth of the patient are not tolerated, but double toweling is used, which is stiff enough to form, perhaps with the aid of a wire frame, a space downward for breathing purposes. With several (three to five at intervals of one half to three quarters of an hour) hypodermics of 1/12-gr. morphine and 1/250-gr. scopolomine, the scopolomine being dropped if the patient becomes restless, these thick drapings about the nose are tolerated by the patient and form a sufficiently firm background upon which to attach tension sutures in any direction with very light hemostats or locking conjunctival forceps. In addition to gloves, all who bend over this field or the instruments should have a face mask that covers the nose as well as the mouth. Clearly, then, I am fearful of every little germ, virus, or particle of foreign material which may merely cause an increase of reactive chemosis and possible reversal of drainage.

I have found retractors, considerably broader than large strong strabismus hooks, to give an inferior exposure, as regards depth, in many cases. No insulation of retractors is necessary because the current is not turned on, as the bare pin goes down by the retractor, but only after it has pressed the sclera distinctly away from the retractor. Use of single or multiple insulated micropins in deep wet areas out of sight, where they may puncture unevenly and fail to coagulate because of current loss, leads to traumatism without treatment. Indeed, at the posterior pole of the eye I believe the Lindner undermining method to be better than diathermic methods, especially for a hole in the macula.

If one avoids the use of a speculum and protects the cornea, as I have urged, by drawing it under either lid with the tenotomy-stump tension suture, it often results that sling sutures in neighboring recti are more of a handicap than a help, while the suture in the tendon stump of the cut muscle will give plenty of rotation and hold firmly throughout a long operation, if the needle is passed three or four times through the stump in a running manner, a few scleral fibers being picked up each time. Although the cornea may be kept practically perfect for ophthalmoscopic observation by the lid-protection method described above, yet such observation usually carries with it so many possible low-grade infection risks, that it should be limited to the utmost compatible with efficiency during the operation.

Since postoperative reaction seems so important, it is advisable to localize tears quite accurately, rather than to make an extensive barrage in order certainly to seclude a very roughly localized tear. For this purpose I have used a phantom manikin of the eye (figs. 12 and 13) and tangent-screen localizing attachment (figs. 14 and 15) for the Friedenwald or other ophthalmoscope. On the outside, the phantom manikin is enameled with all the landmarks and measurements to scale from the cornea to the macula in all meridians, while the inside contains a strip of cellophane fixed at both ends against a scale of the perimetric field with relation to the sclera. By a thread, the cellophane can be drawn away from the wall and fixed in position in any portion to imitate to scale the ophthalmoscopic contour of a meridional section of the detached retina and tear (marked on it with removable script ink). After the elevation of the retinal contour, obtained with the ophthalmoscope, and the tear position

and extent, obtained with the additional aid of perimeter and screen, as cited later, are marked on the cellophane, the thread is released and the cellophane springs back to fit the wall, indicating more truly the scleral position of the tear. Often in bullous elevations an anterior correction of 10 to 20 degrees will be thereby indicated. This model costs hardly a hundredth as much as the almost unobtainably expensive Weve apparatus, yet I find it of the greatest service in studying the contours of each detachment with relation to the scleral landmarks and measurements. Localization of tears is first approximated on the perimeter, then with my attachment for the Friedenwald ophthalmoscope, further correction of errors due to index of refraction is made on the tangent screen as outlined by von Imre[2] and more recently by Cowan and McAndrews.[3]

Summary and Conclusions

(1) Additional devices are described for micropuncture procedure, offering a wider choice to those who prefer the use of forceps. These will, however, always have two tips and require a little more space than the single tip in use with the original stylus method.

(2) All micropins are single and when made of 20-percent iridium-platinum, without insulation, may be cleaned rapidly in the Bunsen flame. Since the contact area of their stops is about equal to or less than the surface area of the pin itself, insulation of stops becomes unnecessary on the reasonably dry sclera.

(3) The use of the most rigid preparative and operative technic seems advisable. A micropin whose point has accidentally touched the skin of the patient or has pricked through the rubber glove of the operator, should not be used in the operation, since diathermic puncture does not sterilize its pathway but may even produce a mild stab culture, at first apparently tolerated by the eye but later causing turbidity of the vitreous.

(4) The Lindner undermining method is superior to microdiathermy in the macular region.

(5) To reduce possibility of postoperative reversal of flow through the micropuncture holes, dehydration of the patient and a pressure bandage much above the normal ocular pressure should be avoided.

(6) In cases selected only to the extent of excluding aphakia and separations of over 18 months' duration, it is possible to get as high as seventeen reattachments, or 81 percent, as indicated in a small series of twenty-one cases.*

[2] Von Imre. Klin. Monatsbl. f. Augenh., 1930, v. 84, p. 90. Cf. Cowan.

[3] Cowan, A., and McAndrews, L. F. Retinal detachment: A method of accurately localizing tears. Arch. of Ophth., 1931, May, v. 5, p. 760.

* Complete quantitative perimetric records were obtainable before and after operation in these seventeen cases and have been displayed in the form of charts and lantern slides at the scientific exhibit of this session.

NOTES, CASES, INSTRUMENTS

CONGENITAL CYST OF THE ORBIT*

FREDERICK A. KIEHLE, M.D.
PORTLAND, OREGON

D.E., aged seven weeks, had been under observation since birth at Doernbecher Memorial Hospital, by reason of a marked swelling of the left orbit, with displacement of the lids and discoloration of the skin of the region.

Labor had been normal and no trauma had occurred, ruling out the possibility of a hematoma. The tumor was soft on palpation and clear to transillumination. On separation of the lids with lid hooks, a soft, purplish, fluctuating mass was found, with no trace of an eyeball. On insertion of an aspirating needle, a moderately thin, straw-colored fluid could be drawn off. X-rays showed a considerably larger bony orbit on the affected side.

On the diagnosis of orbital cyst, its surgical removal was undertaken. Dr. John E. Weeks, on the Consulting Staff of Doernbecher Memorial Hospital for Children in Portland, had seen the child

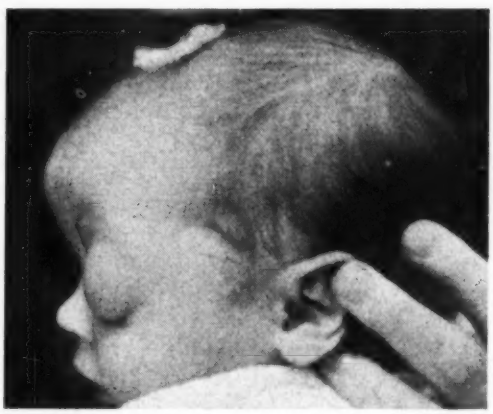

Fig. 1 (Kiehle). Congenital cyst of orbit.

in consultation and kindly consented to operate.

Removal of the cyst was exceedingly tedious on account of its size and close adherence to adjacent tissues. The operation required nearly two hours. Toward its close the patient showed signs of collapse, and death occurred four hours later, probably from surgical shock, as there had been but slight loss of blood.

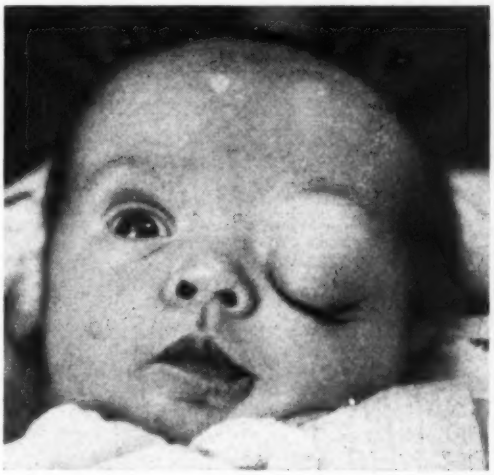

Fig. 2 (Kiehle). Showing the enlarged orbit on the affected side.

The following is the pathological report kindly rendered by Dr. F. H. Verhoeff:

"A macroscopic description: The specimen consists of a cyst about 2.5 cm. in diameter. It is collapsed. The cyst wall in places is as thin as 1 mm., but in other places as thick as 1 cm. In contact with the wall is a disk-shaped mass about 6 mm. by 4 mm. in diameter, the posterior surface of which is coated with a pigmented membrane. The disc-shaped mass, when sectioned through at about its center, shows within it an ovoid smaller area, possibly a cross section of the lens. Diametrically opposite this the globe was perforated at operation. At the site of the perforation there is pigmented tissue. Otherwise, the inner lining of the cyst is smooth with few corrugations.

"Microscopic description: Microscopic examination shows that the cyst and the microphthalmic eye now form one large cavity. It is impossible to tell where the wall of the microphthalmic eye passes into the wall of the cyst. On one side, the cyst wall consists of a thick layer of the embryonic connective tissue representing sclera, to which the retina is closely applied without any intervening choroid. The retina here shows little resem-

* From the Ophthalmic Clinic, University of Oregon Medical School.

blance to a normal retina, consisting of a thick layer of neuroglia in which, however, rows of nuclei of the outer nuclear layer and of the layer of bipolar cells can be seen. On the other side, the wall of the cyst is 1 cm. thick and consists of neuroglia in which some connective tissue is intermingled. The tissue here in places closely resembles that of a glioma of the optic nerve. Within it, here and there, remains of the neuro-epithelium can be seen, forming pseudorosettes and

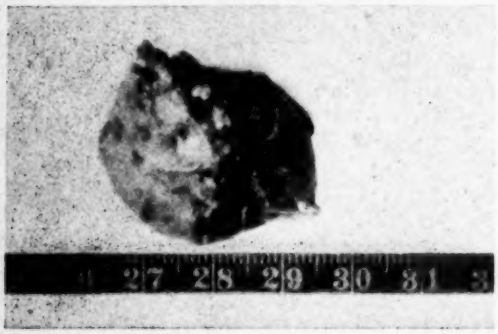

Fig. 3 (Kiehle). Mass of cyst after excision.

tubules. This issue also contains numerous cysts of various sizes lined by a single layer of epithelium, probably representing the unpigmented layer of the pars ciliaris retinae. The optic nerve can be seen extending into this tissue, the neuroglia of the nerve gradually taking on the character of that of the cyst wall. Next to the nerve there is a small amount of vascularized embryonic tissue coated with a layer of pigment epithelium, no doubt atypical embryonic choroid. The cornea is represented by a layer of embryonic connective tissue which could not be recognized as cornea except by its position. Many of its vessels have undergone calcification. Applied to the back of this tissue is a layer of retinal neuroglia. Immediately behind this is a narrow free space, then comes another thick layer of retinal neuroglia, which is applied closely to the cataractous lens. This layer of neuroglia continues entirely around the lens. On its posterior aspect there is a convoluted layer of pigment epithelium which in places resembles that of the pars ciliaris retinae, and in others that of the iris; and in places, here and there, is a slight amount of tissue evidently representing embryonic iris stroma. The cavity of the cyst is apparently empty and contains nothing resembling vitreous."

The accompanying photographs give an excellent idea of the appearance of the child and of the cyst, which is of interest by reason of its unusual size.

1020 Southwest Taylor Street.

AN IMPROVED EYE NEEDLE

CLAUDE S. PERRY, M.D., F.A.C.S.
COLUMBUS, OHIO

Perhaps, while doing a recession operation for strabismus, you have had the annoying experience of having your needle cut through the episcleral fibers. To take a second bite at the site of the torn or severed fibers is often difficult.

To minimize the possibility of cutting through these episcleral fibers the

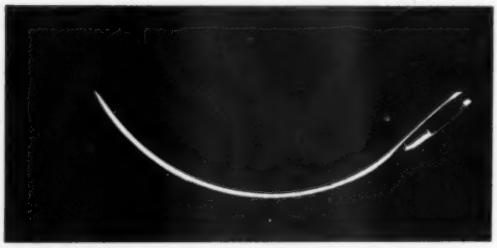

Fig. 1 (Perry). An improved eye needle. ×4.

illustrated needle was made according to my directions. It can be obtained from the W. H. Welch Co., New York. The needle is similar to others on the market, but differs in that there is no cutting edge on the inner curve. The eye has been placed on the side and is of sufficient size to allow the use of a catgut suture. We have used these needles in the Department of Ophthalmology, Ohio State University, and have found them very satisfactory.

40 South Third Street.

SOCIETY PROCEEDINGS

Edited by Dr. H. Rommel Hildreth

WASHINGTON, D.C., OPHTHALMOLOGICAL SOCIETY

November 1, 1934

Dr. Wm. Thornwall Davis, chairman

Retinitis circinata

Major Walter C. Royals of Walter Reed General Hospital presented a man, aged 62 years, who had suffered severe shell shock during the World War and since that time had had recurring attacks of retinal hemorrhages in the left eye. At the present time there was a typical white band surrounding an area approximately three disc diameters in size, centering in the macular region. There were many small hemorrhages seen scattered throughout the enclosed area. Investigation had failed to disclose a cause for these attacks of recurring hemorrhages. The right eye was normal upon examination.

Dystrophy of the cornea

Lt. Commander Ross T. McIntire, U.S.N., presented the case of a naval officer who had had his first eye trouble in 1908, consisting of a purulent infection of the conjunctiva which had been diagnosed as gonorrheal conjunctivitis; for this there was no proof. In 1920, he had had the first symptoms of the present cycle, which began with photophobia and burning of the eyes. These attacks lasted from three to five days, blurring the vision and leaving the eyeball tender. At the beginning of the attack the lids felt very heavy, the symptoms gradually increasing for thirty-six hours and disappearing about the fifth day. Usually one eye at a time was affected.

When first seen at the Naval Hospital he had a severe inflammation of the cornea and an increase in intraocular tension, which would rise as high as to 95 mm. (McLean). The anterior chamber would deepen markedly and the cornea protrude; there was much congestion. These attacks would persist for forty-eight hours. After six months an iridocyclitis developed. The vision was O.D. 20/70, O.S. 20/100; glasses gave no improvement.

At the present time the vision with correction was normal. The pupillary zone was reasonably clear, although there were large punctate areas in the periphery of the cornea. The attacks were now infrequent and not severe.

The visual fields were normal. Several Wassermann and tuberculin tests were negative. He was examined for foci of infection and with the exception of a few teeth, which were promptly attended to, the examination was negative. No cause had been found for his condition.

Orbital hemangioma

Dr. LeRoy W. Hyde presented a child of three-and-one-half years. There was a history of a cyst having been removed from the left orbit at the age of six months. When the child was one-and-one-half years of age the eye became proptosed. A diagnosis of hemangioma of the left orbit was made.

Treatment had consisted of x-ray therapy over a period of one year. The globe had assumed a normal position and no further treatment had been given. The fundus was normal and a general physical examination was negative.

Blue sclera (two cases)

Dr. H. R. Downey presented a white boy, aged five years, and his sister, aged seven years. They represented the third generation affected; each involved member had blue sclerae, multiple fractures and deafness. The possibility that this syndrome might be the result of hyperparathyroidism was mentioned.

Discussion. Dr. Joseph Dessoff said that the case of the boy was of particular interest because the condition had not been noted until the child was several years of age, in spite of the fact that

he had been seen by physicians several times, including an ophthalmologist and an orthopedic surgeon. No case had been reported in which blue sclerae were not present at birth, therefore it was logical to believe that the condition was present at birth but was not observed. Deafness due to otosclerosis was a definite part of the syndrome, coming on usually in early adult life. As far as treatment was concerned, many things had been tried with little success. The hereditary factor was of great importance and the physician should inform the patient or the relatives that if the patient married at least fifty percent of the children would be afflicted.

Lead poisoning of the orbital nerves

Dr. Francis C. Skilling presented the case of a little boy, aged two years. The child had been admitted to Gallinger Hospital on May 22, 1934, with loss of balance and ptosis of three weeks' duration. The child was well developed and well nourished but in a lethargic state. There were ptosis, almost complete fixation of the eyes in the primary position, slight nystagmoid jerks, rapid movement to the left. The pupils were moderately dilated, their reactions sluggish. The retinae appeared edematous. There was a bilateral paralysis of the 3d, 4th and 6th cranial nerves.

Tuberculin and Wassermann tests were negative. A lumbar puncture revealed the spinal fluid under increased pressure. Laboratory findings on the spinal fluid were within normal limits. A blood smear revealed basophilic stippling. X-ray of the long bones showed changes at the epiphyses suggestive of lead poisoning. The urinalysis was not satisfactory.

A history was procured showing that the child had chewed the paint off his bed and had been consuming lead pencils. It was not possible to determine whether the pencils were painted with lead paint.

Discussion: Dr. William H. Wilmer said that the question of pathology was interesting: whether the lesion was a peripheral neuritis, a direct lesion of the nuclei of origin of the nerves, or a direct affection of the muscle itself (a real myopathy) as in "wrist drop" of painters and plumbers.

Perhaps that father of epigrams, Martial, during the first century, recorded a genuine case of "lead poisoning" of the optic nerve. The account concerned a notorious chronic drinker, Phryx. In spite of the warning of his doctor, Heras, Phryx ordered his favorite potation and drank "Good bye" to his unaffected eye. Martial further said: "While Phryx drank wine, his eye drank poison." In this case, as in other instances during the sixteenth and seventeenth centuries, the contamination came from lead in the wine presses, or from lead pipes.

Coloboma of the optic nerve and retina

Dr. Edmond Cooper presented two cases of this condition. The first patient was a colored girl, 13 years of age, whose right eye was normal. The left eye showed a coloboma involving the temporal third of the disc. To the temporal side of the nerve head was an ellipsoid area extending slightly beyond the macula in which the retina appeared to be partially absent. In this area the normal pigment and vessels of the choroid were more easily seen than elsewhere. At the posterior pole there was a dull reddish reflex. The colobomatous area corresponded exactly with the distribution of the papillo-macular bundle of nerve fibers. The visual field of the left eye showed an ellipsoid central scotoma corresponding exactly to the fundus defect just described. The scotoma was relative for white and absolute for red and green. The vision in the left eye was 20/100 with —5.00 D.sph.

In the second patient there was a large temporal coloboma of the disc and a deficiency of the retinal tissue between nerve head and macula in the right eye. This defect was similar to the one described in the first case. The field of the right eye showed a relative paracentral scotoma which could not be well defined. The vision was 20/40 corrected with —4.00 D.sph.

These two cases were examples of typical colobomata due to arrest of development. Attempts had been made

in the past to explain atypical coloboma on the basis of failure of closure of the fetal fissure of the optic cup and rotation of the eye. This view was no longer generally accepted. Rones recently had explained atypical anterior colobomata as resulting from notches in the margin of the optic cup due to variations in the growth energy of the margin. This theory, however, could not explain posterior colobomata when no anterior colobomata were present.

The colobomata in these cases must be explained on the basis of an arrest of development of the nerve fibers arising in the region of the posterior pole of the eye. As a result of this arrest of development there was a coloboma of the retina and optic nerve in the area normally occupied by those fibers. The association of myopia with these colobomata was not understood.

Discussion. Dr. Benjamin Rones said that the two cases presented by Dr. Cooper did not appear to him to fall into the classification of colobomata. The true coloboma of the optic nerve and retina was always in the line of closure of the ventral fissure resulting from failure of closure. These temporal defects were very difficult to classify for it was hard to understand how they could result from defective closure of tissue. Dr. Rones said that it was his opinion that they were the result of toxic disturbances in early fetal stages which did not allow true development of the nerve tissue.

Dr. James N. Greear,
Secretary.

MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

November 13, 1934

Dr. Louis Levy, chairman

Retinoblastoma

Dr. R. O. Rychener presented pathological specimens from both eyes of V.S., an eighteen-months-old girl, seen first on November 29, 1933. The left eye had been removed four days previously because of pain. The parents had noticed for two months that there was a white reflex from the pupil. The child gradually became fretful, lost appetite, rubbed the eye and head, and became stuporous. The eye was enucleated in Little Rock. It was filled with a friable necrotic mass which proved to be retinoblastoma. There was an extension into the retinal vein behind the lamina cribrosa.

At the time of this operation while the child was under the anesthetic, examination of the right eye disclosed a similar process and enucleation was advised. This the parents did not consent to have done immediately, but came to Memphis in the hope that some other procedure might be of avail.

Upon examination a vascular, white mass was seen in two main lobes in the vitreous. There was a good reflex from the macula and the child apparently saw well enough to get about by herself.

It was decided to give the child a chance for vision and 6 mgs. of radium was implanted about the globe for a total of 240 mg. hours. There was no apparent effect from the treatment and x-ray therapy was then resorted to. In spite of repeated exposures by Dr. W. S. Lawrence there was continual progression of the intraocular growth. Enucleation was repeatedly advised but deferred until August 13, at which time the same general symptoms of fretfulness, pain and stupor were present. The globe was then removed and the pathological examination showed retinoblastoma which had extended to, but not through, the lamina cribrosa.

To date there has been no evidence of metastasis and the child was healthy and in good spirits.

Pseudo-retinoblastoma

Dr. R. O. Rychener also presented the pathological specimen from the left eye of A.G., aged twenty-three months, who was seen on January 25, 1934, with exactly the same symptoms as described in the case above and with much the same clinical appearance of the eye except that there was marked ciliary injection and engorgement of the iritic

vessels. There was a gray reflex from the pupil, due to a vascular growth which apparently replaced the entire retina. Tension under anesthesia was 40 mm. Hg. Enucleation was advised and performed, and it was surprising to find that all of these signs, which had clinically simulated retinoblastoma, were due to pseudo-retinoblastoma.

Discussion. Dr. J. B. Stanford thought that some operators were at times embarrassed to discover that an eye removed for retinoblastoma proved to be pseudo-retinoblastoma instead. He had never felt that this was a cause for embarrassment, inasmuch as all these eyes should be enucleated because of the impossibility of differentiating between a growth which endangered life and one which gave rise to local symptoms only. He had had occasion to remove several similar eyes and felt that this was the only safe advice to give.

Nerve blocking in the removal of oral mucous-membrane grafts

Dr. Marshall Stewart, by invitation, said that in many places, a topical application of a ten-percent solution of cocaine was used for anesthesia to remove the mucous-membrane graft from the lower lip. This procedure was painful to the patient and often semibarbarous. A better method was to block the mental nerves at their exit from the mental foramina.

The lower lip was supplied by branches of the mental nerve, its fellow on the opposite side, and occasionally by branches from the cervical nerves which passed up over the chin. The mental foramen was located about 2.5 cm. lateral to the symphysis mandibulae and 2 cm. below the gingival and gum margin of the bicuspid teeth. This distance might be shorter in older people, depending on the amount of absorption of the alveolar process. The foramen lay between the apices of the roots of the lower bicuspid teeth.

It had been found best first to block the lower lip, then proceed to prepare the operative field in the lid in the usual manner for the reception of the graft. This step would shorten the time of operation and prevent undue exposure of the delicate mucous-membrane graft.

The lower lip was grasped gently between the thumb and index finger and pulled outward, the septumlike frenulum now being stretched in the midline at the symphysis mandibulae. With an applicator in the other hand, mercurochrome solution was topically applied at the site of the injection, on either side of the frenulum. The needle should be at least 2 cm. in length. About 1 c.c. of one-percent procaine solution was injected 1 cm. lateral to the frenulum.

The needle was then inserted downward about 1 cm. in a vertical direction. This distance, as explained before, was shorter in older people. In order to avoid a double needle puncture, the needle was pulled partly out and was now directed laterally, backward and slightly downward, nearly 2 cm. in the proximity of the mental foramen, where 1 c.c. of procaine was deposited. It was unnecessary and painful to enter the mental foramen.

The injection was repeated on the opposite side in a similar manner because of an overlapping of nerve filaments from the opposite mental nerve. The actual injection on both sides could be accomplished in less than one minute. The patient would experience a sensation of numbness and thickness of the lower lip within a few minutes. The mucous membrane transplant was now removed in the usual manner.

This painless modification of the mucous graft operation for entropion had been used at the Memphis Eye, Ear, Nose and Throat Hospital by the staff and resident surgeons in five cases. The entire procedure in all cases had been devoid of pain. There had been no sloughing of the transplant because the nerve filaments were blocked distal to the site of graft removal. The protoplasmic poison cocaine was eliminated as a topical anesthetic, thereby preventing interference with normal cell metabolism, the prime requisite of plastic surgery.

R. O. Rychener,
Secretary.

MINNESOTA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

Section on Ophthalmology

October 12, 1934

Dr. J. S. Reynolds, president

Retinal lesions in the toxemias of pregnancy

Dr. Henry P. Wagener (Rochester) said that lesions of the retina or optic nerve were of rather infrequent occurrence in association with pernicious vomiting of pregnancy. But when they did occur, in the form of diffuse hemorrhages in the retina or of optic or retrobulbar neuritis, they were of serious prognostic significance and the pregnancy should be terminated immediately if a fatal outcome was to be avoided.

In the hypertensive toxemias of pregnancy, retinal changes were seen much more frequently. They were primarily vascular in type. Their study was of value not so much in the differential diagnosis of chronic nephritis, preeclamptic toxemia, and eclampsia as in the estimation of the injury caused by the toxemia to the general arteriolar system. The retinal vascular lesion was essentially the same in all these types of toxemia. The lesion was at first functional or spastic, and later, if the toxemia was not controlled, organic or sclerotic. If the integrity of the vascular system was to be preserved, the toxemia should be terminated before the onset of the organic phase of the arteriolar lesion. The development of isolated cotton-wool patches and hemorrhagic areas in the retina usually marked the beginning of organic changes. If the toxemia was terminated by interruption of pregnancy, or otherwise, in this phase serious organic damage to the arteriolar walls could usually be avoided. If the toxemia was allowed to continue until diffuse retinitis developed, permanent arteriolar sclerosis and persistent hypertension were practically inevitable. Detachments of the retina which developed without preceding arteriolar lesions and retinitis had a much less serious prognostic significance with regard to the general vascular system.

Discussion. Dr. W. E. Camp (Minneapolis) asked whether or not the arterial spasms alone could be temporary. Also, what advice should be given to the patient who had a retinitis, in regard to future pregnancies?

Dr. Wagener believed that the tendency to arteriolar spasm would subside in many of these patients if they were given proper conservative management before the onset of retinitis. At the Mayo Clinic it was felt that, when patients showed this tendency to spasm, they should be hospitalized for a few days and put under proper medical care, rest in bed, low protein diet, and limitation of fluids. The tendency to arteriolar spasm would stop, and many of these patients were enabled to continue to the normal termination of their pregnancy. Dr. Wagener thought that, unquestionably, in the last few years, fewer patients developed diffuse retinitis since the obstetricians and internists were learning to handle this condition in a way which reduced the tendency to arteriolar spasm.

The decision as to whether the patients who had shown a rise of blood pressure with arteriolar spasm during pregnancy should be allowed to go through another pregnancy depended considerably on their response to renal functional and hypertensive functional tests during the interim period. The cold test, as used by Drs. Brown and Hines, often furnished valuable information as to the susceptibility of patients to the development of hypertension. Sometimes these patients would show little or no tendency to a rise of blood pressure in subsequent pregnancies, and with care they could usually be carried successfully to term. On the other hand, once a patient had had a diffuse retinitis during pregnancy, residual permanent vascular damage was present and the kidney reserve was probably lowered, so that another pregnancy was apt to result in still further vascular damage. Very few of these patients could be carried successfully through a later pregnancy.

Dr. Wagener said that blood-pressure readings in themselves were not very reliable guides as to whether or not to expect the development of a retinitis. He cited the case of a young girl, nine or ten years old, with a severe, obviously angiospastic, retinitis in chronic glomerulonephritis. The blood-pressure readings were normal or low at the time of the discovery of the retinitis, but a few days later were quite high, 260 systolic and 160 diastolic. It seemed obvious that at least the background for the elevation of blood pressure must have been present before the development of the retinitis. The same sequence of events might be present in toxemia of pregnancy. Retinitis might be seen in patients with lower blood-pressure readings than might be present in those without retinitis. Diastolic pressure readings had been found to be more constant and usually more truly indicative of the severity of the hypertension. It would be of interest later to study the relationships of the systolic pressures to the development of retinitis.

In reference to the question concerning pregnant women who had actual sclerotic changes in the retinal arteries, Dr. Wagener said that ophthalmologists were still considerably undecided as to the definite differentiation of angiosclerotic and angiospastic lesions. It was obvious that if a woman had definite arteriosclerosis in the early months of pregnancy, she fell into the group which showed hypertension or chronic nephritis prior to pregnancy. The retinal changes alone in such patients were often not a reliable guide as to whether or not pregnancy should be allowed to continue, since they were fixed and not subject to rapid change. These patients did not seem to have as much tendency to the development of retinal arteriolar spasm as did the previously normal patients with rapidly rising blood pressures, though they did at times. Still the vascular damage present in the kidneys and elsewhere might be a contraindication to the continuance of the pregnancy even in the absence of an acute toxemia. Some obstetricians felt that pregnancy should not be allowed to continue in the presence of a chronic nephritis, but it seemed that many of these patients with previous hypertension could get a viable child if the pregnancy was terminated early.

Dr. Wagener thought that ophthalmologists had often been deterred from advising the interruption of pregnancy in the presence of commencing retinitis because of the remarkable tendency to improvement of vision even after the development of severe diffuse retinitis. In six months or less, vision was often fairly normal, though there were usually some scotomatous defects. But in hesitating to advise the termination of pregnancy in patients with commencing retinitis, the ophthalmologist was often dooming the woman to the fate of the chronic hypertensive patient; whereas, if he urged prompt delivery, the integrity of the mother's vascular system could usually be preserved and the child had a better chance to live than if the pregnancy were allowed to continue to term.

Walter E. Camp,
Secretary.

AMERICAN JOURNAL OF OPHTHALMOLOGY

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* Deceased.

MEDICINE AND THE FORMS OF GOVERNMENT

The formal teaching of history has often been reproached as concerning itself too much with changes in the external structure of human society, and too little with developments which affected more vitally the lives of the people.

Yet changes in form of government have sometimes arisen out of the operation of those deeper forces; while on the other hand war, as the expression of personal rivalry between individuals or dynasties, has led to profound alterations in the structure of society.

Thus some developments of the feudal system were sustained by the political complications associated with the rise of Christianity; and wars between different sections of Christendom encouraged the overthrow of the feudal system by favoring epidemics of disease which, in turn, led to a scarcity of laborers and enhanced their value.

In the past quarter of a century, economic and political rivalry, war, scientific and mechanical inventiveness, and vast social changes have interacted one upon the other in a complicated tangle of cause and effect.

War itself has frequently stimulated advances in medical and especially in surgical knowledge, while the peacetime developments of medical science have made war more effective by reducing losses from disease and injury.

The growth of medical knowledge was impeded by the intolerance which early Christianity displayed toward independent thinking and toward investigation of natural phenomena. On the other hand, the Mohammedan rulers, regarded as enemies not only of Christianity but of civilization, encouraged translation of the Greek and Roman medical works of antiquity, and did much to keep alive the scientific spirit.

Democratic governments have not always been conspicuous for active patronage of the arts and sciences. Before the World War, Germany was rather generally regarded as a leader in scientific advance, yet the government of

Germany was relatively autocratic, and much of the nation's scientific work was rendered possible by government patronage.

Many of the tyrants and autocrats of history have been men of superior intelligence, and have interested themselves in the pursuit of knowledge. Thus, in the third century before Christ, two Greek kings of Egypt placed the bodies of condemned criminals at disposal for dissection and experimentation by the anatomists Merophilus and Erasistratus, and in the ninth century of our own era a caliph of Bagdad is credited with having created a college of translators of scientific writings into Arabic.

The rivalries of princes and kings have done much to support cultural movements of all kinds. The Prussia of Frederick the Great and the Austria of Maria Theresa were rivals not merely on the battle field but in courtly patronage. Leopold Auenbrugger, inventor of percussion, was a conspicuous figure at the Viennese court, and at that time was best known on account of an opera ("The Chimney Sweep") which he composed to please the Empress.

Baer, pioneer in embryology, was a retainer of the Russian government. Darwin's book "The voyage of the Beagle" was the result of a journey at government expense. Guy de Chauliac, the greatest surgeon of the fourteenth century, passed much of his professional life at Avignon as physician to the popes. The physiologist Haller was a scientific protégé of George II of England, and received from him a professorship of medicine, anatomy, botany, and surgery in the University of Göttingen, then newly established.

Simpson's introduction of chloroform for general anesthesia, in 1847, was subjected to a good deal of criticism by the preachers, as "an impious attempt to thwart the divine will." He replied by calling attention to the Biblical story that a deep sleep was caused to fall upon Adam before removal of the rib for the creation of Eve. The opposition to the use of anesthetics in midwifery was silenced upon acceptance of chloroform by Queen Victoria during the birth of her son Leopold, in 1853.

In the United States, which in our prouder moments we are prone to consider as the world's most successful democracy, the most important endowments for the cause of medical science have come not from the people as a whole (they tend to be niggardly in provision for medical education and medical care) but from successful business men, the individuals who under most forms of government would sooner or later become identified with both power and rank.

Speaking of the uplift of medical education in America from the low standing which it had occupied until the last fourth of the nineteenth century, Osler wrote that "as always the rich were glad to give when they knew where to give intelligently, and endowed generously both study laboratories and general and special hospitals."

In this we have an interesting parallel with the history of the fine arts, music, painting, sculpture, drama, literature, all of which would frequently have starved to death if it had not been for the enlightened patronage of merchants and princes.

King Charles I, much abused and finally beheaded, displayed a continuing interest in the work of his "personal friend and companion" William Harvey in physiology and embryology.

Since the outbreak of the World War in 1914, many of the governments of Europe have undergone more or less violent change, and almost every important country is now in a ferment of agitation. Yet medical literature gives scant token of these momentous upheavals and uncertainties, and for the most part show both stability and progress.

In the United States, the strongly individual character of medical practice may be largely responsible for the widespread fear among physicians of any move toward socialization of medicine. It is not unlikely that the physicians of the United States would find in the Russia of today abundant justification for this attitude; for most of the Rus-

sian physicians, as employees of the government, live on a very meager income and have little opportunity for travel, although a favored few are sent abroad for special periods of study at the expense of the Soviet government. Yet the economic situation in Socialist Russia is steadily changing, and ultimately it is probable that the responsibilities of medical practice will be rewarded there as elsewhere by equivalent privileges.

Scientifically speaking, the Russian ophthalmology of today makes an excellent showing. The Soviet government displays a distinct tendency to encourage scientific research. Recent issues of Sovietskii Viestnik Ophtalmologii, besides reporting the meetings of ophthalmological societies in various large cities present interesting studies of cataract, herpetic keratitis, ocular tuberculosis, trachoma, comparative anatomy, occupational disease, retinal localization, and the establishment of museums in ocular pathology.

Germany, in spite of its political turmoil, continues to publish some of the world's best eye journals. Republican Spain maintains in its ophthalmologic periodicals a quality not inferior to that which prevailed under the monarchy. Fascist Italy, still more or less a disciple of Germany in matters of medical organization and scientific research, presents a group of excellent journals in ophthalmology, with a fair mingling of the practical and the more abstruse sides of experimental study. In both Germany and Italy, much of the so-called research work is in the nature of exercises assigned by ranking superiors in the clinics. France and Belgium, lacking this characteristic, make a less spectacular although often a very practical showing.

In England the most important ophthalmic publication each year is the report of the Transactions of the Ophthalmological Society of the United Kingdom. We find it difficult to escape the impression that the absorption of all previous periodical publications in ophthalmology into one journal, the British Journal of Ophthalmology, has not been altogether "to the good," but has favored some paucity of literary effort, in spite of the fact that our British contemporary, with its large amount of advertising, is financially the most successful eye periodical in the world.

The growth of medical knowledge is a manifestation of that curiosity which is common to all vigorous and healthy intelligence. Although curiosity is a quality which man shares in some degree with the lower animals, in him it is rendered infinitely more purposeful and fruitful by his capacity for ratiocination, the derivation of result from cause, of consequence from premise.

W. H. Crisp.

FACTORS IN THE PRODUCTION OF SQUINT

Strabismus is a disorder of binocular vision. The different processes that are involved in such vision must all be considered in planning the cure, or prevention of squint. A man with one eye cannot have squint; but adjustment of an artificial eye must be made to avoid the appearance of squint. Binocular vision is a complete coordination, and all the elements concerned must be accurately adjusted to order to secure the perfect result. Chevalier Taylor could do something to one eye and cover it up; the other eye would look straight until the cover was removed, after he had had time to get away to a new field for quackery. But in the end his failures were so generally manifest that even he gave up the practice and never claimed the honor of having invented a new operation.

The contending theories regarding squint have each been based on a one-sided view of part of the factors involved. Human binocular vision is a late development. Treacher Collins traced it to "our arboreal ancestors." They needed it to spring from branch to branch and to judge accurately of distance, size, shape, and color of small objects. There is no evidence of such vision below the cat family.

In the human embryo the visual axes start widely divergent. In the 9-mm. embryo (first month of fetal life), these axes meet at an angle of 160 degrees. At

birth the eyes have moved from the sides of the head squarely to the front, to a position where they can cooperate in binocular vision. During early infancy the macula rapidly develops in the retina, and macular vision assumes its great importance and dominating influence on the movements of the eyes. The search movements, by which we can promptly turn the macula to examine an impression first recognized in the peripheral retina, develop before accurate binocular movements can give us the use of identical points in the two retinas. Such coordinations make exact fixation possible, which then becomes habitual.

After that, binocular fixation can be further developed, become accurate, and begin to be useful as a reflex, to avoid binocular diplopia. This is the normal fusion training that the healthy child gets by the instinctive use of his faculties The ultimate result is a sensory-motor coordination of great accuracy and complexity. It involves the sensations secured and coordinated by peripheral and macular vision of both retinas, the accommodation of both eyes, all the movements of the eyes, and, less directly, the movements and posture of the head, neck, and body.

The eye spots of the amphioxus are distributed to different segments of its body, and with its almost transparent tissues receive light from all directions. In the fish, with eyes reduced to two, these are placed on opposite sides of the head. By movements of its flexible body, light can be utilized coming from any direction. Most of the mammals also have their eyes placed laterally, so that their fields of vision include the greater part of a sphere. When the eyes are shifted to the front, a field of binocular vision becomes possible. The movements of the head and neck become more free, extensive, and exact. The story of the owl in a tree, that watched a man walk around the tree until it twisted its own neck and fell to the ground dead, is slightly plausible. An owl has eyes in front with little power of movement; it watches by twisting its head.

The young child to fix its eyes in different directions turns its head, and often its whole body, in the direction that it wants to look. This differs from the behavior of an adult, rolling his eyes in different directions, and glancing out of the corner of his eye without turning his head. The child's first motions of reaching and touching, are initiated and guided by sight; and vision helps the coordinations that enable it to sit up and to walk. Watching the mother's face, the movements of older children, domestic animals, and moving vehicles, keeps up the normal "orthoptic training" that is needed to develop the basic coordinations of sight and movement. The older child continues its training by watching and catching a ball, or following the movements of older children in all their games. Becoming interested in small objects, the child touches them, grasps them in the hand, and holds them close to its eyes for examination. In this way is acquired the power of coordinating accommodation and convergence for short periods, which the young child possesses in common with most of the monkeys.

With school life comes a demand for continued near seeing, which taxes the acquired power of using accommodation-convergence. This prolonged near fixation brings eyestrain and disturbs the coordination that had previously served the child's purposes. At this time excessive convergence, to reinforce the excessive accommodation required by hyperopic eyes, quickly causes convergent squint, makes it constant, and generally fixes it in the eye that is used with the greater effort.

Other factors dominate the development of divergent strabismus. In the Bowman Lecture of 1889 Prof. Hansen Grut pointed out that a divergent position of rest is natural to the eyes. The orbits are always divergent. In deep sleep and narcosis, and in death, the eyes become divergent. If one eye becomes blind it diverges. If an eye becomes myopic, the coordination of accommodation no longer helps to initiate and guide convergence. But all binocular near seeing requires convergence, increasing with the myopia, and soon becoming excessive in amount. Myopia

usually increases faster in one eye than in the other, making it harder to use the two eyes together. Binocular vision is given up, first for very near vision, then for a greater distance. The older classification of strabismus included "parallel squint," the visual axes remaining parallel when a near object was looked at. Divergent squint, thus begun, increases and becomes constant for all distances at which things are seen.

More frequently than is generally recognized concomitant squints, especially the vertical deviations start with a temporary paralysis, or paresis, of a particular ocular muscle. The weakness may afterward be overcome. But the habit of binocular fixation and vision has been lost before the muscle recovered function, and squint is left that may be permanent. Normal binocular vision requires the aid and coordination of many structures and movements. Absence or defect of any one will prevent such vision and cause squint.

The recent interest and attention directed to the cure of squint by neuromuscular training, has revealed factors in the production of squint that had heretofore remained unrecognized and unsuspected. The results of these efforts may, in the particular case, often prove unsatisfactory. But it is certain that something will be gained by them, and that in future, with broader understanding of it, strabismus will be less common, less disabling, and less unsightly. Edward Jackson.

THE TALKING BOOK FOR THE BLIND

During the last few years there has been remarkable growth of interest in blind people. One of the important products of this interest is the "Talking Book." It is a combination radio and refined phonograph developed in the sound-recording laboratories of the American Foundation for the Blind. By throwing a switch a blind person can turn on either a very good radio or a book of his selection.

The library of Congress is building up a free library of records of different sorts of books at the rate of two or three a month. The recording discs are light, and a surprising amount of reading is stored in them. A complete novel may be recorded on about fifteen of the discs, and great care has been taken to have good rendition. They can be had without cost to blind persons who will make application for them to the Library of Congress in Washington or to any public library for the blind. The borrower is free of any expense, even the postage.

The American Foundation for the Blind in New York sells the machines at cost, and the officers of the foundation are very eager to have a wide distribution of them for the benefit of people deprived of the sense of sight. The little machine can be carried about easily and it will work by connection with a light socket. Speed and volume are readily controlled by simple adjustments.

One of the privileges that come to the ophthalmologist is to be of service to blind patients whose sight he cannot restore, and he may well take the lead in bringing to the attention of the laity means of beneficence for people temporarily or permanently deprived of vision.

The "Talking Book" is a godsend to patients in eye hospitals.

John M. Wheeler.

PRENATAL OPHTHALMIC CARE

In the monthly bulletin of the Department of Public Health of the city of Philadelphia, for October-November-December 1934, was published a very interesting survey on the "Limitations of the use of silver nitrate in the prevention of ophthalmia neonatorum" by Dr. Louis Lehrfeld. The basis for the report was a six months' survey of nearly 28,000 hospital birth records and 2,000 cases of ophthalmia neonatorum. The primary object of the survey was to discover why the incidence of ophthalmia neonatorum in Philadelphia had shown no appreciable diminution in the past fifteen years and to make recommendations which, if adopted, would reduce its frequency.

As a matter of definition Dr. Lehrfeld suggests including under ophthalmia neonatorum any inflammation of the baby's eyes during the first month of life, because ten percent of the nongonorrheal and seven percent of the gonorrheal type occur after the eleventh day of life.

Perhaps most ophthalmologists will be surprised to read that over a period of thirteen years (1920-33), the extent of the survey, only twenty-eight percent of cases of ophthalmia neonatorum were of gonorrheal origin leaving seventy-two percent nongonorrheal. Lazar's figures, quoted by the author, were forty-five percent gonorrheal and fifty-five percent nongonorrheal in eighty cases (Lazar, N. K., Arch. of Ophth., July, 1931, v. 6, p. 32).

In Lehrfeld's statistics the nongonorrheal cases were divided into those due to pneumococci and staphylococci, a large group in which no organisms could be found (thirty-five percent of Lazar's cases). Six percent of Lazar's patients showed inclusion bodies. He regarded these bodies as a cellular response to inflammation rather than as organisms. No specific studies were made for inclusion bodies in the patients reported by Lehrfeld so no significance can be attached to the failure of this group to appear in his statistics.

Another matter of considerable importance, and contrary to the generally accepted views, is that twenty-four percent of the gonorrheal cases developed in the first day after birth! The customary teaching has been that if an infection developed within the first twenty-four hours the organism was not the gonococcus. The explanation advanced by the author is that probably in these cases the membranes had ruptured long before the birth of the child and infection had occurred a correspondingly long time before delivery. In the nongonorrheal type forty-two percent developed infection on the first day. How much of the nongonococcal type is attributable to the effect of chemical irritants is not estimated but that this has been a considerable factor is recognized.

In order to discover the reason for the continued relatively frequent incidence of the ophthalmia neonatorum, which in this series of 27,873 babies was 632 or 2.2 percent, consideration was given to differences in pre- and postnatal care in the individual hospitals from which these case records were taken. A very considerable discrepancy was unearthed. It was found that in two hospitals the rate was only one-fifth that in two others. In as much as the method and amount of instillation of silver nitrate were very similar in all, it was necessary to seek elsewhere for this difference. The outstanding variation proved to be the treatment of the gonorrheal infection in the expectant mother in those institutions which showed the lower percentage of gonorrheal ophthalmia neonatorum and the failure to carry out such treatment in the others. In the latter no effort was made to determine the existence of gonococci in the pregnant women. Although the survey showed that a large proportion of mothers whose vaginal smears were negative for gonococci gave birth to babies with gonorrheal ophthalmia neonatorum the author considers this as merely an indication that more care should be used in this examination.

The author points out that whereas forty-four states in this country require the use of silver nitrate or some other germicide in the eyes of the newborn, none requires the treatment of gonorrhea in the expectant mother. One of his conclusions, therefore, is that state laws should be changed to include prenatal antisepsis. He recommends thorough flushing of the eyes of the newborn with three ounces of boric-acid solution for each eye, to be followed immediately by instillation of one half of one percent of silver nitrate solution. This should be repeated on three successive days. On the fourth and subsequent days for two weeks the eyes should be flushed thoroughly by the attending physician with sterile boric-acid solution.

This report is very valuable; it is illuminating and constructive. That we should accept calmly a 2.2-percent inci-

dence of ophthalmia neonatorum in our institutions when this percentage could be greatly reduced is unthinkable. The suggestion as to the more careful treatment of the eyes of the newborn is excellent. Undoubtedly the customarily employed routine is inadequate. The idea that one instillation of one-percent silver nitrate is a complete prophylaxis against gonorrheal ophthalmia is absurd but seems to have crept into the teaching of medical students and nurses. I recall vividly my amazement when on inquiry as to what preventive measures had been employed in a hospital with which I was closely connected, in the case of a baby born of a mother known to be infected, who had developed gonococcus of the eyes, to learn that one instillation of one-percent silver nitrate in each eye had been the entire treatment of the baby's eyes! It is essential that this teaching be revised and the correct concept given to obstetricians, wherever necessary, to medical students, and to nurses. Furthermore familiarity with the importance of careful prenatal examination of the mother for gonococcal infection and prophylactic treatment instituted when necessary should be broadcast by ophthalmologists so that this thought may become as rapidly as possible the common knowledge of all concerned.

As to whether the solution of the problem rests in legislation or not is less easily answered. To formulate suitable laws as to prenatal prophylaxis of the mother would present many difficulties; for example, it would not be easy to obtain general agreement as to what constituted adequate treatment and a second obstacle would be the difficulty of administration, considering the variations of the time element between admission to hospitals and labor, the great number of mothers delivered in their homes, who would be unaffected by the law or on whom, if the law did include them, a check-up would be impossible. Possibly a later step may prove to be legislation, but at present and at once the problem is one of education, and no time should be lost in its inception. Lawrence T. Post.

BOOK NOTICES

Handbuch der biologischen Arbeitsmethoden (Handbook of biologic technique). **Methods for examination of the vegetative functions of the eye, etc.,** by K. Velhagen, Jr., with 44 illustrations; and **Methods of photography of the ocular fundus,** by J. W. Nordenson, with 12 illustrations. Paper covers, this part containing pages 1313 to 1425. Price, 6 marks. Urban and Schwarzenberg, Berlin, 1934.

The monograph by Velhagen, which occupies 88 pages and is splendidly illustrated, is divided into two principal sections, one of experimental surgery of the eye, and the other on physiologic experiments. In large part the details of technique for various lines of experimentation have been accumulated from the essays of investigators in the individual departments dealt with. The illustrations are chiefly reproduced from such original sources, references to which are given with the various illustrations and in the text. The monograph should be of great value to research institutions and to those who are engaged in animal experimentation with regard to the eye.

Nordenson is widely known for his work in photography of the fundus. The present short monograph is a description of his apparatus and of the necessary technique, with appropriate illustrations, and with a good bibliography. W. H. Crisp.

Le décollement de la rétine, pathogénie —traitement (Detachment of the retina, pathogenesis—treatment). By J. Gonin, professor of the ophthalmologic clinic at the University of Lausanne. 279 pages, with 38 plates outside the text. Large octavo, cloth bound, price not given. Librairie Payot et Cie, Lausanne, 1934.

Whatever modifications of technique may be proposed or accepted, and whatever may be the ultimate evaluation of

the comparative merits of Gonin's ignipuncture and of the substitutes devised by other workers, there can be no question that the name of Gonin will go down into ophthalmologic history as marking an epoch in the understanding and treatment of this formerly hopeless malady. Lindner, who recognizes his own technique as a logical further development of Gonin's idea, credits Gonin with laying the foundation for the treatment of retinal detachment, to his "immortal honor."

In the preface to the present volume, Gonin defends himself against the opinion expressed by some ophthalmologists that his therapeutic results were merely empirical; and he refers the reader to reports, published in 1919 and 1920, in which he described his preliminary anatomical and clinical studies of the problem.

The basic thought is expressed by the author in the following words: "Separation or detachment of the retina does not in itself constitute a morbid entity; properly speaking it is only an anatomical accident which may complicate widely varying ocular affections. Its causes are multiple and often difficult to elucidate, the more so since two or three among them may combine and act in the same case."

From the mechanical standpoint, Gonin discusses elevation of the retina by a transudate or exudate arising in the choroid; traction applied to the anterior surface of the retina in consequence of a perforating wound or an abscess in the vitreous; distension of the retina by a violent contusion; and marked diminution of volume of the eyeball in relation to a large wound or progressive atrophy.

In anatomical examination of eyes affected with idiopathic detachment, the principal findings include retraction of the vitreous as far as the ciliary region, persistence of adhesions between this retracted mass and the retina, the identity of the fluids accumulated behind the vitreous and in the retroretinal space, the presence of retinal tears, and the frequent coincidence of these tears with foci of anterior chorioretinitis.

Gonin found that in two thirds of the cases the detachment came on suddenly or rapidly. It occurred much more frequently in the upper than in the lower parts of the eye. In the great majority of cases, and sometimes a few hours after the first symptoms, it was possible to find one or more tears in the region in which the detachment had appeared. Familiar, of course, is the tendency of the detachment to descend gradually after beginning in the upper region.

In the section on treatment, which occupies about one half of the text, the author naturally devotes a great deal of space to accurate localization and closing of the retinal tear or tears. A preliminary sketch of the fundus, showing the position of the detachment and the tears, should be corrected by reexamination, using maximum mydriasis. After complete failure to find a tear, the retinal pocket may be punctured through the scleral opening in the lower part of the eye, penetrating the choroid but not the retina. In the new detachment which is likely to appear in the course of four or five days the tear will usually be found.

The methods proposed by other workers for closure of the tear are carefully described, with excellent illustrations. Complications and relapses are discussed, with illustrative case reports. A long subchapter is devoted to the questions whether, when, and how to operate in any given case. Seventeen pages are devoted to a bibliographic index.

In actual bulk, more than one third of the volume is occupied by the magnificent series of thirty-eight plates, mostly in color, and representing well over one hundred individual illustrations, in addition to those appearing in the text.

It may be said without hesitation that this volume, by the distinguished pioneer in the present-day approach to the treatment of retinal detachment, is entirely worthy of the subject and is likely to stand for all time as a great classic in the literature of ophthalmology.

W. H. Crisp.

OBITUARY

Morie Frederick Weymann
1899-1935

When death claims one who has lived his four score years, be he ever so useful or so beloved, we are able to accept fate's dictum with reasonable equanimity because we have learned that of such a number are man's days: but no such consolation is ours when the call comes in the fullness of youth, when the fruits of education and training are just ripening and knowledge is becoming wisdom.

Morie Weymann was born in Saint Joseph, Missouri, in 1899, the son of a physician. His later education was at the University of Missouri and the Washington University School of Medicine, from which he was graduated in 1922. Unquestionably one of the outstanding men in his class, it was with much satisfaction that those of us associated with Dr. A. E. Ewing learned that Weymann was to take his ophthalmological training with him.

Dr. Weymann remained with this group for two years, learning rapidly and serving Dr. Ewing generously and well. During these years his clear thinking and original ideas were remarkable, and in this time he laid the foundation for his later researches. We became much attached to him and hoped that he would continue in our association beyond the two years of training. But the West appealed to him more strongly than the Middle West and, having youth and a world of courage, he borrowed enough money to buy an automobile and with his wife, whom he had married in his medical-school days, motored to Los Angeles and started at once to practice ophthalmology.

Los Angeles is fortunate in having a splendid group of ophthalmologists, many of whom thought that there was room for one more eye physician and welcomed him cordially. This was true bigheartedness, because even then the migration of physicians from all over the United States to Southern California was getting into full swing, so that their absorption had become a serious problem. From the start, Dr. Weymann was successful. He loved the city, the country, and the people. Adjustments to the new environment were quick and satisfactory. Practice rapidly sprang up. Having been trained to appreciate the value of association with a medical school, he early obtained such a connection and found therein one of his greatest pleasures. He had natural

Dr. Morie F. Weymann

ability as an organizer, which was recognized and rewarded by his appointment, after a few years, as head of the Department of Ophthalmology in the University of Southern California Medical School. He thereafter devoted much time to his work in the school and brought about an efficient reorganization of the department. His plans for the future looked to the establishment of an outstanding training school for ophthalmologists.

It was natural that one with his inclinations should desire a part in the literary phases of his specialty, so he accepted the invitation of the Directors of the Journal to join the Editorial Board in 1932, and at once became a

valuable member. He reflected very well the feelings of his section of the country and had a keen insight into general ophthalmic trends. The training of ophthalmologists, relation with optometrists, and State medicine were among the many controversial subjects which he had studied carefully and about which he had definite and forceful ideas. He contributed many thoughtful articles to the Journal. His editorials were excellent, continually showing increasing vision and power. He attended ophthalmic society meetings frequently, so that he was often available for consultations and friendly talks. The regular attendance at national society meetings is an arduous matter to anyone, but only those located on the Pacific Coast know how difficult it can really be!

Dr. Weymann was divorced from his first wife (Mildred Fulford). His second marriage was to Marguerite Rollins on March 8, 1933. They were exceedingly happy together and life's cup appeared to be brimming over—an ideal home life; a practice so large that plans had been made to add an assistant to his office force; and the recognition by the profession of his growing place in ophthalmology, as evidenced by his election, in 1932, to Associate Membership in the American Ophthalmological Society and as second vice-president-elect to the American Academy of Ophthalmology and Otolaryngology in 1934.

A conversation with Dr. Weymann in the fall of 1934 indicated that he was laboring under great nervous tension. Letters written in November and December suggested the same thing and it was with considerable relief that word was received that he was going away for a rest. On his home coming, reassurance of returning health and self-confidence led to the hope that all was well. But the case was otherwise and the end came on Sunday afternoon, January 13, 1935.

Those associated with him will recall his humorous smile, his kindliness, his perspicacity. Medicine has lost a brilliant man and his associates a true friend.

Lawrence T. Post.

CORRESPONDENCE

Dispensing of lenses by the ophthalmologist

Editor American Journal of Ophthalmology:

Sometime since, an editorial by Dr. Crisp appeared in your journal with reference to the prescribing and dispensing of glasses by the ophthalmologist. This is a subject that should be discussed freely and from every angle.

It might be of interest to know the manner in which the matter is managed here by a few men who desire a fair fee for their work but also wish to safeguard their patients:

A nonrefracting optician whose honest and efficient methods of conducting business were known was selected. He made a list of prices for which he agreed to furnish the patient frames, lenses, and case. This price list also showed what the refracting optometrist or optician usually charged for the same merchandise (this in the low-price brackets amounted to $8.00 more than his price, in the higher brackets $10.00 to $15.00 more). In addition, he sends us each month a list of patients sent to him with the amount charged them, so that we can know that his prices remain at the same low level.

Take a specific instance: I charge my patient $5.00 for refraction and send him to my nonrefracting optician who charges him $7.00 for frame, lens, and case. The patient pays a total of $12.00 for a refraction by an oculist including his glasses, which is three dollars less than he would ordinarily pay an optometrist for the same merchandise.

What does this accomplish? It makes it possible for the ophthalmologist to say to his patient that he can have the benefit of an examination by a medical refractionist and glasses complete at less cost than even the optometrist would charge. If an ophthalmologist wished to charge his patient $10.00 for examination, even this fee with additional charge for glasses would be equivalent to what many of my patients have been charged for the same merchandise by optometrists of good standing.

Now, what good will come of handling the matter in this way? Simply this: The optometrist advertises publicly or to his patients that he does not charge for examination, but you know as well as I that the increase in price of his merchandise covers this fee. But if we can send our patients to a nonrefracting optician who will watch our interests and furnish for $7.00 the same merchandise for which the optometrist charges $15.00 to $23.00, they, our patients, will know that the glasses do not cost so much after all, and that an examination is really necessary. The optometrist then will either have to meet this low price or advertise to his patient that he charges an honest fee for examination. He will still have the advantage of straight advertising over the ophthalmologist, but if public attention is called to the fact that both medical and nonmedical refractionists charge for examination, it is self-evident to whom the patient will appeal for aid.

It is as bad for the ophthalmologist to refer his patients to the refracting optician or optometrist as for the general practitioner to send his to the counter-prescribing druggist. He is sending them to his greatest competitor. Because the optometrist sends him a patient at times, he is not obtaining some return; the great majority of these cases the nonmedical refractionist is unable to handle himself, and eventually the patient would seek the aid of the ophthalmologist.

In a recent article in your Journal it was stated that 35 percent of all persons applying to the optometrist for refraction need medical examination, for pathology is present in this percentage of cases. The nonmedical refractionist refers only three percent of his patients; thus 32 percent do not receive proper care for their eyes.

J. Garfield Alcorn.

Columbus, Ohio.

ABSTRACT DEPARTMENT

EDITED BY DR. WILLIAM H. CRISP

Abstracts are classified under the divisions listed below, which broadly correspond to those formerly used in the Ophthalmic Year Book. It must be remembered that any given paper may belong to several divisions of ophthalmology, although here it is only mentioned in one. Not all of the headings will necessarily be found in any one issue of the Journal.

CLASSIFICATION

1. General methods of diagnosis
2. Therapeutics and operations
3. Physiologic optics, refraction, and color vision
4. Ocular movements
5. Conjunctiva
6. Cornea and sclera
7. Uveal tract, sympathetic disease, and aqueous humor
8. Glaucoma and ocular tension
9. Crystalline lens
10. Retina and vitreous
11. Optic nerve and toxic amblyopias
12. Visual tracts and centers
13. Eyeball and orbit
14. Eyelids and lacrimal apparatus
15. Tumors
16. Injuries
17. Systemic diseases and parasites
18. Hygiene, sociology, education, and history
19. Anatomy and embryology

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4. OCULAR MOVEMENTS

Blegvad, Olaf. **Retraction syndrome.** Det oftalmologiske Selskab i Köbenhavn's Forhandlinger, 1933, v. 183, pp. 1-4. In Hospitalstidende, 1934, Nov. 20.

A girl of seventeen years presented the following symptoms: congenital paralysis of both external recti, action of all the other muscles being normal; widening of the palpebral fissure in abduction and narrowing in adduction; and retraction of the eyeball in adduction. The author believes that the widening of the palpebral fisure is due to "overflow" of nervous stimuli in attempted abduction.

D. L. Tilderquist.

Lodberg, C. R. **Retraction syndrome.** Det Oftalmologiske Selskab i Köbenhavn's Forhandlinger, 1933, pp. 23-24. In Hospitalstidende, 1934, No. 20.

Two cases were presented. A girl of sixteen years showed a congenital bilateral defect of abduction. In each eye adduction was normal but was accompanied by retraction of the eyeball and narrowing of the palpebral fissure. When either eye attempted abduction, the palpebral fissure became wider and protrusion of the eyeball occurred. The other patient, an aunt of the first, had a similar left-sided defect of abduction accompanied by retraction of the eyeball and narrowing of the palpebral fissure. Adduction, however, was also defective. With the eyes in the primary position there was slight divergence of the left eye, and the patient kept the head turned a little to the right to obtain binocular vision. Protrusion of the eyeball in attempted abduction is supposed to be due to joint action of the obliques. Surgical treatment should be considered with great caution. The sclera is often brittle and atrophic, and accidental surgical perforations have occurred. D. L. Tilderquist.

Spiegel, E. A., and Aronson, L. **The interaction of cortical and labyrinthine impulses to ocular muscle movements.** Amer. Jour. Physiology, 1934, v. 109, Oct., p. 693.

Continuing previous studies in which it was shown that the vestibular nuclei play an important rôle in the cortical control of lateral eye movements, the authors stimulated the cortical centers of eye movements after unilateral labyrinthectomy in cats. Stimulation of the cortex on the side of the normal labyrinth results in antagonistic cortical and labyrinthine impulses, with final predominance of the labyrinthine impulses, resulting in nystagmus toward the stimulated hemisphere. In caloric stimulation of the labyrinth, the cortical reaction was weaker than the vestibular reaction and the nystagmus toward the

stimulated hemisphere was suppressed. The authors assume that interference of cortical with labyrinthine impulses takes place in the vestibular nuclei.

Edna M. Reynolds.

5. CONJUNCTIVA

Busacca, Archimede. **The presence of Rickettsia-like bodies in trachomatous tissue and the occurrence of specific changes in the organs of animals inoculated with trachoma virus.** Graefe's Arch., 1934, v. 133, p. 41.

In the altered corneal epithelial cells which cover pannus and in the reticuloendothelial cells of the granulation tissue which composes pannus, the author reports finding small bodies which he classified with the microorganisms known under the name of Rickettsia. These occur isolated, in small groups, or in the classical form of small diplococci. In the latter form they measure between 0.5 to 0.8 micra in length and about 0.2 micra in width. Chains are readily found between the epithelial cells both in smears and in sections.

Smears were made from cases of florid trachoma by excising small pieces from the conjunctiva of the superior fornix and from the vicinity of the limbus corneae and dabbing these upon cover slips, using a special Giemsa's stain in which the p_H is 7.2. Rickettsia differs from the inclusion bodies of Halberstädter-Prowaczek. Injection of unfiltered material into the brain of white mice and of both filtered and unfiltered material into the spleen of white mice produced no specific changes. Filtered and unfiltered material injected into the vitreous of rabbits and guinea-pigs produced in only three cases a true pannus with nodular formations resembling those of human trachoma. Other experiments had to do with inoculation of human material into guinea pig testes and into rabbit and guinea pig brains.

H. D. Lamb.

Chen, W. Y. **Keratitis nummularis Dimmer.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 890-893.

The first case of keratitis nummularis diagnosed in China is reported in a soldier nineteen years of age. Numerous disc-shaped greyish opacities were observed in each cornea. No organisms were found in cultures from the corneal lesions. Unsuccessful attempts at transfer were made by inoculating the corneas of rabbits with material from the patches of keratitis. John C. Long.

Ch'in, T. L., and Hu, C. K. **Papular syphilide of the bulbar conjunctiva.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 852-855.

Moist papules and condylomata were found elsewhere. The conjunctival lesion consisted of a fleshy, gelatinous pink mass situated above the limbus. Dark field examination was positive for Treponema pallidum. John C. Long.

Cunningham, E. R. **Gumma of bulbar conjunctiva.** Chinese Med. Jour., 1934, v. 42, Sept., pp. 856-857.

The lesion, in a Chinese man of twenty-eight years, consisted of a raised semitransparent pink area capped by small white patches. Regional lymph glands were enlarged, suggesting Parinaud's conjunctivitis, but laboratory and therapeutic tests confirmed the diagnosis of gumma. John C. Long.

Ferrari, A. **Concerning the different behavior of infection and of reinfection of the conjunctiva of animals (rabbits and guinea pigs) with various types of tubercle bacilli.** Arch. di Ottal., 1934, v. 41, June-Nov., p. 274.

Human, bovine, and avian types of tubercle bacilli were used in the experiments. After subconjunctival inoculation of cultured bacilli, granulomata appeared in all rabbits and guinea-pigs injected. Enlarged glands appeared in seventeen to twenty-four days in guinea-pigs after injection with any type. No glands appeared in the rabbits thus injected. Granulomata appeared in the eye in four to twenty days after subconjunctival injection of human and bovine types. The author concludes that the human type of tubercle bacilli produces a more severe and precocious lesion in the conjunctiva of the guinea-pig and the bovine type of tubercle

bacilli produces an equally severe lesion in the conjunctiva of the rabbit.

Herman D. Scarney.

François, Jules. **A study of the follicular type of tuberculous conjunctivitis.** Bull. Soc. Belge d' Opht., 1934, no. 68, p. 46.

The author studies a case of conjunctivitis in a young girl of fourteen years. Of four illustrations three are photomicrographs, one clinical. Tuberculous conjunctivitis may clinically resemble trachoma, some form of follicular conjunctivitis, or Parinaud's conjunctivitis. Physiotherapy (x-ray, ultraviolet and infrared rays) combined with antigen therapy is recommended in conjunctival tuberculosis. (Bibliography.)

J. B. Thomas.

Gifford, S. R. **The question of Parinaud's conjunctivitis.** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 484. (Ill.)

Gifford explains some misunderstandings in the report by Junius on the relation between tularemia and Parinaud's conjunctivitis. He proposes the clinical term "conjunctivo-glandular syndrome of Parinaud" for the group formerly known as Parinaud's conjunctivitis, and caused by various organisms, including bacillus tuberculosis, bacillus pseudotuberculosis rodentium, and microbacillus polymorphus necroticans. Determination of eosinophilia, agglutination with bacillus tularensis, and histological examination according to Verhoeff's method in cases of Parinaud's syndrome are urged for specifying the relative importance of the different pathogenic agents.

C. Zimmermann.

Gow, W. H. **Some clinical observations on cases of keratomalacia in Manchuria.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 885-889.

In the last ten years 2.9 percent of eye cases were diagnosed as keratomalacia. Especially prone to the disease are infants with long-standing diarrhea, undernourished children, poor apprentices, and vegetarians. Five distinct stages recognized are: night blindness, dryness of the conjunctiva with or without hyperpigmentation, xerosis of the cornea, corneal ulcer with or without hypopyon, and destruction of the cornea with total prolapse of the iris. Cod-liver oil is a specific remedy. A liver diet may be substituted. Eighty percent of the cases were cured.

John C. Long.

Grimm, R. **Some remarks on torpid corneal affections.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 881-884.

Grimm describes two types of torpid corneal ulcer that occur in China. The first is a marginal ulcer with crescentic margins, the second is placed clinically between ulcus rodens and ulcus serpens. General debility seems to be an important factor. They are often found in opium addicts. Cauterization is of little value. Paracentesis and attention to the general health are important.

John C. Long.

Hamburger, Franz. **The rôle of inclusion virus in the eye of the new-born and on the genitals of the mother.** Graefe's Arch., 1934, v. 133, p. 90.

Among ninety cases of catarrhal inflammation of the new-born observed in 1933, twelve were cases of gonoblennorrhea, forty-one inclusion blennorhea, and thirty-seven negative. Of thirty mothers whose children suffered with inclusion blennorrhea, twenty stated that during and even before pregnancy they had had a more or less pronounced discharge, and in all the thirteen cases responding to query the discharge continued after completion of labor. Inclusion disease of the genitals of the mother is generally confined to the external genitals and the vagina, where it may cause symptoms that cannot be differentiated clinically from subacute gonorrhea.

H. D. Lamb.

Julianelle, L. A., and Harrison, R. W. **Studies on the infectivity of trachoma. 2. On the relation of human and simian folliculosis to the infection induced by trachomatous tissue in monkeys.** Amer. Jour. Ophth., 1935, v. 18, Jan., pp. 10-14.

Lamb, H. D. **Hyperplasia of the covering epithelium of the tarsal conjunctiva in trachoma.** Amer. Jour. Ophth., 1935, v. 18, Jan., pp. 47-51.

Luo, T. H. **Keratoconus.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 869-880.

A general discussion of the diagnosis, pathology, and treatment of keratoconus is given, with a case report.

John C. Long.

Soudakoff, P. S. **A case of tuberculosis of the bulbar conjunctiva.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 847-851.

The nodule, occurring in a woman of forty-two years, ulcerated. Healing followed partial excision. Histopathologic studies and the presence of an old pulmonary tuberculosis confirmed the diagnosis. John C. Long.

Soudakoff, P. S. **Membranous conjunctivitis complicated by binocular corneal ulcers caused by streptococcus infection.** Chinese Med. Jour., 1934. v. 48, Sept., pp. 833-838.

A Chinese boy aged three years developed bilateral pseudomembranous conjunctivitis, mastoiditis, and cervical abscesses fourteen days after scarlet fever. Membranes gradually covered both corneas. Streptococcus hemolyticus was found in cultures of the membranes. One cornea perforated with escape of the lens. The other cornea sloughed away. The pseudomembrane disappeared after nine days.

John C. Long.

Tang, F. F. **Recent progress in the study of the etiology of trachoma.** Chinese Med. Jour., 1934, v. 48, Sept., p. 839.

There are at least one hundred million people suffering from trachoma in China. Only about one percent of Chinese trachoma victims become blind, whereas the percentage of blindness in American and European patients is at least three. Various theories of the etiology of trachoma are discussed.

John C. Long.

Wang, Cheng-Lieh. **Statistics and pathology of scrofulous ocular inflammations in Shanghai.** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 505.

Wang reports on the scrofulous eye affections observed during 1931 and 1932 in the polyclinic of the Paulun Hospital at Shanghai. They constitute a much higher percentage of all eye diseases than in Europe. This is attributed to depressed hygienic conditions, inadequate nutrition (avitaminosis), and the moist climate, especially from April to July. Scrofulous ophthalmia occurs twice as often in men as in women and mainly in the laboring class. It is most frequent in adults. In ninety-two percent Ponndorf's reaction was positive. The phlycten is regarded as nonspecific anaphylactic phenomenon on the eye of a tuberculous-allergic individual.

C. Zimmermann.

6. CORNEA AND SCLERA

Fledelius, M. **Blood imbibition of the cornea.** Det Oftalmologiske Selskab i Køpenhavn's Forhandlinger, 1933, v. 183, pp. 5-10. In Hospitalstidende, 1934, Nov. 20.

In reviewing the available records twenty-six cases of hemorrhage in the anterior chamber are found; discoloration of the cornea by the blood pigments to greater or less extent occurring in nine instances. The extent of the diffusion is determined to some degree by the amount of blood, the length of time it is present, and the increase of intraocular tension. Resorption of the blood pigment from the cornea is often very slow, and sometimes incomplete, leaving the cornea permanently cloudy. Treatment is on the whole unsatisfactory. Paracentesis of the cornea and emptying the anterior chamber is often a good procedure, and is indicated if after two or three days there is much pain, increased intraocular tension, cloudiness of the cornea, pericorneal deep injection, and no signs of resorption. Subconjunctival injections of normal saline hasten the process of resorption. As an international term for the process the author suggests "hemochromatosis corneae." D. L. Tilderquist.

Gow, W. H. **Some remarks on prolapse of the iris and its treatment.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 894-896.

In this Manchurian series of 375 iris prolapses the most common causes were trachomatous ulcer 52 percent, eczematous ulcer 17 percent, keratomalacia 10 percent, gonorrheal ulcer 8.5 percent, injury 5.8 percent, smallpox 2.9 percent, measles 2.9 percent, and serpiginous ulcer 1 percent. Sneezing was a common precipitating cause. Therapy consisted of excision of the prolapse with or without the application of a conjunctival flap. Massive prolapses were repeatedly punctured and pressure bandages were applied. John C. Long.

Jendralski, Felix. **Malignant scleritis with formation of caverns.** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 628. (Ill.)

A painful malignant scleritis of the right eye of a woman aged fifty-seven years, existing for about four weeks, presented a large cavern which may have been due to necrosis. The scleritis may have had some relation to a tuberculous infection of the left lung.

C. Zimmermann.

Ling, W. P. **Leucoma adherens and staphyloma corneae among the Chinese.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 897-904.

During four years 678 cases or 5.5 percent of all eye cases examined at the Peiping Union Medical College had either leucoma adherens or staphyloma corneae. The author discusses the age incidence, etiology, occupation, disability, and so on, of these cases. The most important etiologic factors were phlyctenular disease, keratomalacia, and gonoblennorrhea. John C. Long.

Müller, Hans. **Peculiar bilateral degeneration of the cornea of a child.** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 474. (Ill.)

In June, 1932, a child aged five years showed an arched opacity of the lower half of each cornea and an alteration of the endothelium of the whole posterior surface, with reduced sensibility. It gave the impression of a dystrophy of unknown local or general etiology. In May, 1934, the child was under treatment for several months for parenchymatous keratitis. It then became known that the grandfather had had lues. Repeated blood Wassermann and luetin tests were negative.

C. Zimmermann.

Nowkirischky, A. D. **Treatment of old corneal opacities with Schuberg's eye salve.** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 496.

Nowkirischky treated fourteen persons (twenty eyes) with corneal opacities, between the ages of fourteen and fifty-five years, with Schuberg's eye salve and fourteen others with dionin, oxide of mercury, and noviform salves. He found that the clearing effect of Schuberg's salve about equalled that of dionin and other materials. Perhaps the essential action of Schuberg's salve rests on its content of dionin.

C. Zimmermann.

Snell, H. C. **Horse serum in the treatment of corneal ulcers.** Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 597.

The author used antitetanic serum to instill into eyes with corneal ulcers after a report of work by Gordon in the British Medical Journal, February 18, 1933. The serum was used instead of antiseptic drops such as argyrol and the results were so gratifying that it was used routinely for all corneal ulcers, wounds, and cases of conjunctivitis which required hospital treatment.

Beulah Cushman.

Trematore, Mario. **Experimental keratitis from the bacillus of Calmette and Guérin.** Lettura Oft., 1934, v. 11, Oct., p. 475.

Clinical and histopathologic studies were made on twelve rabbits inoculated intracorneally with heavy suspensions of this bacillus. Infiltrative lesions appeared about the fourth day, reached their acme at the end of a month, and regressed to complete healing in from three to four months. The inflamma-

tory process did not spread to the other ocular membranes or to internal organs. The rabbits examined at the height of the infection (one month) showed a typically tuberculous picture. The reparative process in the corneae of two rabbits examined after complete cure had taken place resembled that seen after experimental aseptic trauma of the cornea (earlier investigations by Leonardi). Six of the twelve rabbits received acetone extracts of the bacillus subcutaneously on alternate days following the intracorneal inoculation. The only difference seen in these as compared with those which had not received the injections was that in the former the acme came on earlier and that lysis was clinically less stormy. (Bibliography and plates.)

F. M. Crage.

Wibo. **Treatment of keratoconus by fistulizing sclerectomy.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 90.

For rapidly progressive conical cornea in a young woman of twenty-nine years, the author performed a Lagrange sclerectomy on each eye, with the result that after about six months the corneae had resumed their normal curvature and the irregular astigmatism had disappeared. The corrected vision in O.D. rose from 0.4 to 0.7, and in O.S. (which had been previously cauterized) from fingers at 50 cm. to 0.5. In discussion Rasquin reported a case of keratoconus treated with the Elliot trephine operation, with a perfect result still maintained at the end of three years.

J. B. Thomas.

7. UVEAL TRACT, SYMPATHETIC DISEASE, AND AQUEOUS HUMOR

Ebergéngi, Alexander. **Metastatic panophthalmitis after septic abortion.** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 674.

In a multipara aged thirty-eight years, metastatic panophthalmitis appeared before general symptoms of puerperal sepsis such as rigor or high fever. Inflammations of the eye in the puerperium are to be taken very seriously with regard to prognosis.

C. Zimmermann.

Gow, W. H. **Some remarks on prolapse of the iris and its treatment.** Chinese Med. Jour., 1934, v. 48, pp. 894-896. (See Section 6, Cornea and sclera.)

Merrill, R. H. **An anomaly of the ciliary body associated with congenital cataract.** Amer. Jour. Ophth., 1935, v. 18, Jan., pp. 15-19.

Mintscheff, P. **Unilateral reflex mydriasis at parturition and in uterine diseases of cats.** Graefe's Arch., 1934, v. 133, p. 138.

In thirty-two cats at labor, the unilateral mydriasis was observed constantly as a reflex symptom of the act of delivery. It appeared at loosening of the placenta, continued unchanged during birth, and ceased one or two days afterward. Increased dilator tonus of both pupils (more circularly round) of cats in advanced pregnancy was also noted. The reflex was likewise found in pyometra, rupture of the uterus, and torsion of the horn of the uterus.

H. D. Lamb.

Schlodtmann, W. **Pathologically retarded involution of the pupillary membrane and its connection with other diseases.** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 623.

After finding remnants of the pupillary membrane in seventy-six percent of patients suffering with hemolytic icterus, Schlodtmann made systematic slitlamp examinations of 800 persons, with regard to this anomaly. He found forty-eight percent of positive cases. Stähli's high percentage, 63.25, from Switzerland suggested to Schlodtmann the thought of a possible connection with disturbances of the endocrine equilibrium, as in Switzerland thyroid affections are so very frequent.

C. Zimmermann.

Sondermann, R. **Contribution to the knowledge of development of the iris.** Graefe's Arch., 1934, v. 133, p. 67.

The anterior layer of the iris and the pupillary membrane form a genetically single structure. The resorption causing obliteration of the vessels of the

pupillary membrane also extends simultaneously to a large part of the vessels of the iris. The author traces further developments including the angular line, the so-called space of Fuchs', and the crypts. H. D. Lamb.

T'and, Y. T. **Pigmented epithelial cyst of the iris.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 905-909.

A cyst of the iris complicated leucoma adherens which followed a phlyctenular ulcer. The cyst was treated by radium with little success. A broad iridectomy was done, removing much of the cyst. Apparently the cyst resulted from implantation of limbus epithelium. (Photomicrographs.)

John C. Long.

Van der Straeten. **Cataract following iridectomy; means of avoiding it.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 83.

The author quotes from an anatomical study by Salzmann in 1930, of thirty eyes affected with cataract after iridectomy and enucleated at his clinic. Four of these enucleations were incidental to 345 iridectomies for iridocyclitis and its after effects, and twenty-six were incidental to 351 iridectomies for glaucoma, half of them operated in the hope of saving the globe. To avoid production of cataract, it is suggested that (1) if the iris is bound by adhesions the incision should be made from without inward, layer by layer, and the iris then grasped carefully; (2) if the iris is free the globe should be trephined and the iris which presents in this opening should be excised, so as to give a large total iridectomy in acute glaucoma and a peripheral iridectomy in chronic glaucoma.

J. B. Thomas.

Whitwell, G. P. B. **Recurrent buccal and vulval ulcers with associated embolic phenomena in the skin and eye.** Brit. Jour. Dermatology and Syphilis, 1934, v. 46, Oct., p. 414.

Three cases of buccal ulcer of many years duration are reported. One occurred in a male who had recurrent iritis. The Wassermann test was strongly positive but prolonged antisyphilitic treatment had little effect upon the recurrence of the mouth ulcers and iritis, which came every ten to twenty-one days except during novarsenobenzol therapy, when they occurred less often. Gold injections, tuberculin, and removal of septic teeth were without effect. The patient was also subject to two kinds of skin eruption, and on one occasion there were herpetic erosions of the glans penis. The other two cases occurred in females, and the buccal lesions were accompanied by vulval ulceration and skin eruptions.

Edna M. Reynolds.

8. GLAUCOMA AND OCULAR TENSION

Allen, T. D. **Early diagnostic signs of glaucoma.** Virginia Med. Monthly. 1933, v. 60, Dec., p. 531.

This is a well written paper on the very early diagnostic signs, symptoms, and field changes in early glaucoma. Numerous case reports are cited and field charts shown to emphasize the early perimetric findings.

M. E. Marcove.

Burnham, G. H. **Primary glaucoma. The respective values of the different forms of treatment.** Brit. Jour. Ophth., 1934, v. 18, Dec., p. 687.

Burnham divides this disease into two kinds: noncupping and cupping. He thinks the noncupping variety due to a certain type of cyclitis without exudate, while he regards the cupping variety as caused by inflammation of the optic disc and the nerve immediately back of it. His treatment is: eserine 1/16 to 1/8 gr. to the ounce, instilled, a powder of mercury and chalk with Dover's powder, and one of sodium iodide and bromide.

D. F. Harbridge.

De Mets. **The influence of endocrine disorder on the evolution of certain ocular affections.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 66.

This is a report of a case of glaucoma in a patient who had hypothyroidism.

J. B. Thomas.

McLaurin, J. G. **An operation for glaucoma.** Amer. Jour. Ophth., 1935, v. 18, Jan., pp. 26-30.

Sanguinetti, C. **Clinical and statistical considerations in primary glaucoma.** Lettura Oft., 1934, v. 11, May, p. 233.

From 232 cases of primary glaucoma statistics were compiled concerning its frequency in the various regions of the country, sex affected, age incidence, refraction, and therapy. Refraction in 220 of the eyes showed emmetropia in 140, myopia in 72, and astigmatism in eight. Forty-eight cases were operated upon by the Lagrange method of sclerectomy with iridectomy. Thirty-three cases were operated upon according to Elliot's technique, but the late infections, five in number, caused the author to prefer the Lagrange operation.

F. M. Crage.

Shapira, T. M. **Glaucoma capsulare.** Amer. Jour. Ophth., 1935, v. 18, Jan., pp. 31-33.

9. CRYSTALLINE LENS

Albrich, Konrad. **Treatment of subconjunctival prolapse of the vitreous.** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 663.

Two cases of subconjunctival vitreous prolapse after cataract extraction were treated with the diathermic needle, with speedy recovery.

C. Zimmermann.

Blessig. **Suction of soft cataracts.** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 673.

Blessig recommends removal by suction of soft, traumatic, or needled cataracts, and of cortical remnants after extraction, as devised by Shapira. (See Amer. Jour. Ophth., 1934, v. 17, p. 1081.) C. Zimmermann.

Chang, L. W. **Dislocation of the lens.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 916-927.

Seven cases are reported, four congenital and three traumatic. Two of the congenital cases gave a family history of dislocated lens. Two of the traumatic cases were myopic.

John C. Long.

Chou, C. H. **Cholesterin crystals in juvenile cataract.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 910-915.

In a boy of sixteen years, the entire thickness of each lens contained numerous crystalline bodies that were quite regular, polygonal in shape. In addition to the crystals there were some irregular white masses. No cause was found. (Biomicroscopic drawings.)

John C. Long.

Goldman, H. **Remarks on the paper of Semadenis "concerning fractional iris irradiation in the rabbit eye, etc."** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 671.

A controversial comment.

Hartlieb, Robert. **Cure of late infection after cataract extraction.** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 526.

On the seventh day after normal cataract extraction in a mentally weak woman aged seventy-six years, the eye showed intense irritation, chemosis, the cornea streaky and nodular, the wound open with infiltrated edges, slight prolapse of the root of the iris, the pupillary area filled with whitish flocculi. Ten c.c. of two percent trypaflavin was injected intravenously, and later 2 c. c. of omnadin intramuscularly. This was repeated every day for a while. After a month the eye was without irritation, and the vision with +10 sphere 1/35. The trypaflavin and omnadin produced yellow discoloration of the scleras and the whole body for days.

C. Zimmermann.

Horner, W. D. **Sutures for lid control in cataract operations.** Amer. Jour. Ophth., 1935, v. 18, Jan., p. 33-35.

Merrill, R. H. **An anomaly of the ciliary body associated with congenital cataract.** Amer. Jour. Ophth., 1935, v. 18, Jan., pp. 15-19.

Romanowa, O. **The significance of the parathyroid in the pathogenesis of**

cataract in adolescence. Graefe's Arch., 1934, v. 133, p. 143.

Examining forty-three patients suffering with lamellar cataract, varying in age between three and thirty-six years, the author found in thirty-five (81 percent) signs of latent tetany. Among twenty-two patients with cataract, varying in age between nine and forty-two years, seven (31.8 percent) presented a diminished amount of calcium in the blood; in six (27.3 percent) latent tetany was demonstrated; and a corresponding latent tetany with diminution of the calcium content of the blood was observed in only a single case. H. D. Lamb.

Van der Straeten. **Cataract following iridectomy; means of avoiding it.** Bull. Soc. Belge d'Opht., 1935, no. 68, p. 83. (See Section 7, Uveal tract, sympathetic disease, and aqueous humor.)

10. RETINA AND VITREOUS

Brana, J., and Radnai, P. **The prognosis of hypertony based on vascular changes of the ocular fundus.** Klin M. f. Augenh., 1934, v. 93, Oct., p. 455.

The investigations of the authors indicate the great value of intraocular changes in regard to prognosis of hypertony. In the absence or low degree of such changes, they found a hypertony mortality of two percent, in severe vascular changes sixty percent, and with the most intense changes one hundred percent. Albuminuric or hypertonic retinitis occurs only with cases of intense vascular change in the fundus. C. Zimmermann.

Coppez, Léon. **Experimental choroiditis practiced with the aid of the pyrometric electrode.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 58.

This study is a continuation of one presented to the Society at its previous meeting, in which the author described the action of pyrometric diathermy on the human eye. He now presents an anatomic study nine days after application of diathermy, near the papilla at 80°, in an eye affected with sarcoma of the ciliary body. (One photomicrograph.) J. B. Thomas.

Fischer, F. P. **Micrometry of the fundus according to Spinelli.** Klin. M. f. Augenh., 1934, v. 92, April, p. 530.

Fischer claims that his method of localization with regard to the corneal vertex (see Amer. Jour. Ophth., 1932, v. 15, p. 262) has remained unknown to Spinelli (see Amer. Jour. Ophth., 1934, v. 17, p. 462). Fischer had called attention to a flaw in Spinelli's method. Weve's procedure (see Amer. Jour. Ophth., 1932, v. 15, p. 266) is preferred by Fischer to his own, for one can localize on the patient in the recumbent position immediately before operation. C. Zimmermann.

Fritz, A. **The differential pressure of the retinal vessels.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 36.

In general, differential pressure expresses the state of permeability of the vessels, the diastolic fall in arterial pressure being greater as the paths of the blood stream are larger. The physiopathologic examination of the retinal vessels makes possible observation of the differential pressure at the level of an arteriole and a venule of about 0.1 mm. caliber, the one opening and the other ending a capillary net which presents no other anastomoses. Such observations compared with others at the level of the brachial artery may give a particularly good idea of the mode of obliteration of the pulse in both normal and pathologic cases. The author draws the following conclusions: Differential pressure undergoes but little change between arteries of large caliber (about 3 mm. diameter) and arterioles (0.1 mm. in diameter). This fall of the differential, 5 mm. Hg in normal cases, may reach 10 to 15 mm. Hg in hypertension. Absorption of differential pressure occurs essentially in the arterioles and venules of about the caliber of the retinal artery and vein. This absorption can be more or less marked, sometimes complete. The mode of obliteration of the retinal vein, with or without pulsation, is determined not by the condi-

tions of equilibrium between intraocular and intravascular pressures, but by the existence or absence of differential venous pressure. Observation of obliteration of the vein indicates constant pressure or the maximum and minimum intravenous pressures, and is a sign of the elasticity of the vein, comparable to that of the artery. (Eight figures in the text.) J. B. Thomas.

Goedbloed, J. **Observations on the vitreous. 2, The gel-nature of the vitreous.** Graefe's Arch., 1934, v. 133, p. 1.

The vitreous does not act like a gel because intensive hydration produces no increase in its volume, in spite of corresponding changes in its framework. Increased hydration of the vitreous framework on the contrary is associated with diminution in volume of the entire vitreous. Unlike a gel, the freshly enucleated vitreous diminishes constantly in physiologic p_H. The pronounced diminution in volume which the vitreous undergoes in definite p_H conditions as well as the milder decrease in other circumstances is irreversible. The vitreous as a whole is not elastic. Therefore the most important characteristics of a hydrogel, namely elasticity and capability of swelling, are wanting. Diminution in volume of the vitreous as the result of mild pressure is likewise irreversible. The opacity occurring in the vitreous in acid states is due to complex precipitation of a mucoprotein, while alkaline opacity is most probably caused by deposition of calcium phosphates. Diminution in volume of the vitreous in acid media is dependent upon mechanical expression due to shrinking of constituent threads from precipitation of mucoprotein. Decrease in volume in alkaline media is the result of solution of the vitreous framework by the digestive action of strong alkalies. H. D. Lamb.

Klein, Miklós. **Remarks on Spinelli's article on micrometry of the fundus for scleral localization of retinal points.** Klin. M. f. Augenh., 1934, v. 92, April, p. 531.

In principle Spinelli's method of determination of the meridians (see Amer. Jour. Ophth., 1934, v. 17, p. 462) is the same as Klein's, but it uses the ophthalmoscope, whereas Klein works with his localizing perimeter (see Amer. Jour. Ophth., 1933, v. 16, p. 838).

C. Zimmermann.

Knapp, Paul. **Raynaud's disease?** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 466. (Ill.)

Three different cases presenting symptoms similar to those of Raynaud's disease are reported, with the one common feature of occlusion of the retinal arteries of unknown basis, the ages of the patients and the general examinations definitely excluding primary sclerotic vascular changes or lues. Attacks of temporary visual disturbance from retinal ischemia and anemia had been observed for years, but primarily there certainly were no embolic or thrombotic processes. Apparently thrombosis and endarteritis developed after nervous angiospasms over many years had produced secondary organic alterations in the vascular walls.

C. Zimmermann.

Koyanagi, Y. **The behavior of the retinal pigment epithelium in eclampsia.** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 478. (Ill.)

In a primipara of twenty-six years, with eclampsia, who died twenty-four hours after cesarian section, Koyanagi found flat detachment of the apparently healthy retina, and beneath the retina coagula carrying pigment granules derived from the pigment epithelium. Ophthalmoscopically this may appear as an edema of the retina.

C. Zimmermann.

Machemer, H. **The processes in living tissue created under the influence of the galvanic current. (Electrolytic treatment of retinal detachment.)** Klin. M. f. Augenh., 1934, v. 93, Oct. p. 489. (Ill.)

Machemer's experiments with the galvanic current indicate that in the treatment of retinal detachment chemical processes are active. Practical application of this method within the last

year and a half on a number of detachments in man yielded good results.

C. Zimmermann.

Sallmann, L., and Rieger, H. **Posterior detachment of the vitreous in retinal detachment.** Graefe's Arch., 1934, v. 133, p. 75.

Observations were made with the slitlamp, using a single five-power Zeiss ocular and a weak Reichert objective. The upper focusing screw of the microscope was taken off on the right side so that examination was possible with the light-pencil directed almost parallel with the line of the microscope tube. Among twenty-four myopic detachments of the retina, in eighteen, or 70.9 percent, definite detachments of the vitreous were present. Of twenty nonmyopic detachments, eleven, or 55 percent, showed vitreous detachment. Occasional observation of vitreous detachment in the fellow eye also supports the opinion that it precedes the retinal detachment. Thus the hypothesis of Leber and Gonin as to formation of retinal detachment from occurrence of vitreous detachment as a predisposing factor is confirmed.

H. D. Lamb.

Trantas, A. **Retinal tears without detachment.** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 521.

With reference to Vogt's observations on tears of the retina without detachment, Trantas mentions that he described such cases in 1930 before the Medical Society of Athens.

C. Zimmermann.

Uyama, Yasuo. **Retinal anomaly in a human eye, particularly comparable with Oguchi's disease.** Graefe's Arch., 1934, v. 133, p. 164.

An eye enucleated because of traumatic luxation of the lens into the anterior chamber, with secondary glaucoma and no vision, showed anatomically abundance of cones and the cone nuclei displaced anteriorly into the visual-cell layer, thinning of the outer and inner nuclear layers, multiplicity of the ganglion cell layer, and a great number of interstitial horizontal cells. These findings are very similar to those observed in Oguchi's disease, the only difference being that this case (unlike Oguchi's disease) showed the inner nuclear layer poorly developed and the interstitial amacrines comparatively numerous. Functional examination of the fellow eye showed no changes.

H. D. Lamb.

Vogt, Alfred. **Results of cathodal electrolysis ("catholysis"), or a new method for curing retinal detachment.** Graefe's Arch., 1934, v. 133, p. 26.

Any apparatus for the electrolysis of cilia is sufficient, but the needles must be fine. The cathode is attached to the penetrating fine needle because many bubbles of hydrogen form in contact with the cathode and particularly at its point. Since the needle of the apparatus is inserted under the direction of an ophthalmoscopic view of the fundus, the position of the point of the needle can always be definitely known by the location of these gas bubbles. Puncture therefore takes only a fraction of a second. The strength of the electric current used varies between 0.5 and 1 ma. Puncture through the retina may be repeated a dozen times in the region of the retinal tear or as many times as the size and shape of the tear indicate as necessary. The anode is placed upon the eyeball. The method commends itself by reason of its comparative lack of damage to the eye. With it the author succeeded in replacing the retina in a seventy-nine-year-old patient with a giant retinal tear, in a sixty-eight-year-old patient with a retinal detachment of eighteen months standing, and in another sixty-eight-year-old patient with five large to moderately large openings.

H. D. Lamb.

Wölfflin, E. **Contribution to the pathologic anatomy of albuminuric neuroretinitis.** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 446. (Ill.)

A man, aged fifty-eight years, chronic alcoholic, affected with chronic nephritis, had observed for a year failure of sight in both eyes. The retinae showed

numerous hemorrhages and white patches, especially at the macular region, but no stellar figure. Microscopically the retina was thick and contained many cystic cavities of different forms and sizes in the intermediate and inner granular and multipolar ganglion layers. There was extensive transudation between external limitans and neuroepithelium, where the retina was detached from the choroid. The walls of the vessels of the retina and iris were very much thickened, and the choroid also was very much thickened from enlargement of its bloodvessels.

C. Zimmermann.

11. OPTIC NERVE AND TOXIC AMBLYOPIAS

Goldfeder, A. E., and Rapoport, K. N. **Severe visual disturbances after hemorrhage, cured by blood transfusion.** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 666.

A pale weak woman of thirty-four years, suffering from chronic metritis, had severe metrorrhagia after the last of several abortions. The third day she discovered on awakening that she had become blind. The vision had remained minimal for the past six weeks. The right eye was amaurotic, the left had vision of 0.2, and both optic nerves were atrophic. Vision increased to right 0.08, left 0.9, the visual fields were enlarged, and the optic discs gradually became more pinkish. The authors therefore recommend blood transfusion not only in very recent visual disturbances after loss of blood but also in older cases.

C. Zimmermann.

Hermans. **Exophthalmos and bilateral blindness due to fibromyxoma of the sphenoidal sinus.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 62.

An intranasal tumor developed over a period of seven years, during which several minor nasal operations were performed to relieve occlusion of the nasopharyngeal tract, extreme exophthalmos, failing vision, and intense headache. All symptoms but the blindness were relieved by an extensive opetration exposing both nasal fossae and all paranasal sinuses, from which common cavity a large tumor mass was curetted. (Three figures.)

J. B. Thomas.

Lauber, Hans. **The pathogenesis of papilledema.** Wiener klin. Woch., 1934, v. 47, Dec. 21, pp. 1537-1541.

In ninety-three patients of the neurologic clinic careful measurements of pressure in retinal arteries and veins were made with the ophthalmodynamometer just before spinal puncture. There was an intimate relationship between the retinal venous and the intracranial pressure, the height of the venous pressure being a good indicator of the height of the intracranial pressure. The author argues that development of papilledema depends on the relationship between diastolic pressure in the retinal veins and arteries. In low arterial pressure even a small increase of venous pressure due to increased intracranial pressure causes swelling of the disc, while even very high intracranial pressure with high venous pressure may not cause any symptoms if the arterial pressure is also high. Thus the pathogenesis of papilledema is attributed to low diastolic arterial pressure with normal intraocular pressure and increased pressure in the retinal veins as direct consequence of increased intracranial pressure.

Bertha Klien Moncrieff.

Nutt, A. B. **Quinine amblyopia.** Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 626.

Following injection of 30 c.c. of thirty percent quinine and urethane after emptying of a hydrocele, only 10 c.c. could be withdrawn. Almost immediately after the injection the vision began to fail, and by the following morning there was no perception of light in either eye. The patient complained of a violent headache, buzzing in the ears, and deafness. The pupils were dilated to 7 mm. and there was no reaction to light. The retinal vessels were narrowed and diminished in number, the fundus generally pale and slightly edematous. Next day the patient could distinguish light from dark,

and the day after was able to discern the lights in the ward. Eight days later vision had improved to R. 6/6 and L. 6/6 partly, but the visual field was markedly contracted.

Beulah Cushman.

12. VISUAL TRACTS AND CENTERS

Hughes, C. A. **Aneurism of the internal carotid artery.** Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 621.

The diagnosis was not made until on the operating table. The symptoms and findings were as follows: diplopia, left vision failing in one month from 6/9 to fingers at 6 feet, paralysis of the sixth cranial nerve, proptosis, partial optic atrophy, left field extensively lost downward inward and outward. The radiologist reported destructive bone changes involving the posterior wall of the sella turcica and the posterior clinoid process, pointing to the presence of a tumor. Operation showed an aneurism of the left internal carotid at the point of origin of the ophthalmic artery, and interference was not feasible.

Beulah Cushman.

Juba, Adolf. **Cortical double representation of the macula and projection of the visual cortex on the external geniculate body of man.** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 595. (Ill.)

In a case of extensive softening of the left occipital lobe, except as to the anterior portion of the upper lip of the calcarine fissure, a wedge in the most medial part of the left external geniculate body was preserved. There were no essential changes in the right visual cortex, optic radiation, Wernicke's field, or the optic tract, although an atrophy of the dorsocentral portion was found in the right external geniculate body. This atrophy was attributed to destruction of cortical optic fibers supplying both sides, so that the case seemed to speak for cortical double representation of the macula. In the left upper corpus quadrigeminum was encountered a degeneration of the superficial medullary lamellae which had developed from the lesion of the palliotectal path.

C. Zimmermann.

Peremy, G. **Severe visual disturbance in pregnancy through lesion of the chiasm.** Klin. Woch., 1934, v. 13, Oct. 20, pp. 1505-1507.

A woman aged forty years had lost the vision of one eye during three pregnancies. The eye showed primary optic atrophy. During the fourth pregnancy the vision of the other eye began to fail and a central scotoma was found, which was later followed by hemianopia. The retrobulbar neuritis is considered by the author of toxic origin (Uhthoff) and the later chiasmal symptoms as belonging to the group of visual disturbances due to hyperplasia of the hypophyis in pregnancy (Erdheim). Termination of pregnancy resulted in marked improvement of visual acuity.

Bertha Klien Moncrieff.

13. EYEBALL AND ORBIT

Bailey, J. H. **The oculocardiac reflex. Marked reaction following enucleation of eyeball.** Amer. Jour. Ophth., 1935, v. 18, Jan., pp. 22-25.

Blum, H. N. **Subconjunctival injections of adrenalin in venous thrombosis.** Amer. Jour. Ophth., 1935, v. 18, Jan., pp. 54-55.

Cavara, V. **Contribution to the study of the Schüller-Christian syndrome.** Boll. d'Ocul., 1934, v. 13, Jan., pp. 9-63.

A woman of thirty-eight years with diabetes insipidus showed a slight left exophthalmos with normal ocular movements, and an extensive, tender, slightly elevated tumefaction in the left fronto-temporal region, with indefinite limits and irregular surface on which zones of softness and others of bony resistance were palpated. Severe pain radiated from this region to the left side of head at night. X-ray examination showed thinning of the frontal, temporal, and parietal bones, while the roof of the orbit and its external wall and the small wing of the sphenoid showed islets of bone tissue. All the symptoms improved under radiotherapy. The author reports also the history of a young man affected by the cardinal symptoms of Schüller-Christian disease, who at

post-mortem examination showed characteristic xanthomatous masses in the skull and orbits. (Bibliography.)

M. Lombardo.

Claes, Elsa. **Three cases of phlegmon of the orbit.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 97.

The writer reports cases illustrating propagation of infection to the cellular tissue of the orbit by three different routes: (1) most frequent, through the orbital wall from infected paranasal sinuses; (2) from cutaneous facial infections, notably furuncle and erysipelas; (3) by metastasis.

J. B. Thomas.

Dorrance, G. M., and Loudenslager, P. E. **Physiological considerations in the treatment of pulsating exophthalmos.** Amer. Jour. Ophth., 1934, v. 17, Dec., pp. 1099-1112.

Frey, Guernsey. **A prosthesis for exenterated orbit.** New York State Jour. Med., 1934, v. 34, Oct. 15, p. 888.

The prosthesis was used after exenteration of the orbit with removal of the lids for melanosarcoma. The prosthesis with eyelids molded to cover the orbital aperture is held in place by spectacles. Edna M. Reynolds.

Greenfield, S. D. **Acute sinusitis in children associated with orbital complications. The conservative treatment. Report of ten cases.** Laryngoscope, 1934, v. 44, Sept., p. 683.

The anatomy and development of the nasal accessory sinuses in children are described, and the relations between the ethmoid cells and the orbits are given in some detail. A definite break in the limiting walls between ethmoid cells and orbit is indicated by fixation of the eyeball and induration of the orbital tissues. In these cases treatment is purely surgical, but if the infection is extraorbital, although there may be intense edema of the lids and conjunctiva accompanied by proptosis and severe general symptoms, the author recommends conservative treatment—the use of astringents to shrink the mucous membranes, followed by evacuation of the ethmoid cells by suction. He reports ten cases in which conservative treatment was followed by rapid recovery.

Edna M. Reynolds.

Krause, A. C. **The lipids of the sclera, cornea, choroid, and iris.** Amer. Jour. Physiology, 1934, v. 110, Nov. 1, p. 182.

Normal bovine eyes from animals one year old were used to determine the nature and distribution of ocular lipids. The experimental procedure is outlined and the results are summarized in tabular form. The ratio of fats to the other lipids is high in the sclera and the substantia propria of the cornea, because of their connective tissue structure, and correspondingly low in the choroid, iris, and corneal epithelium. The amount of phospholipid depends partly upon the number of active living cells and is remarkably high in the corneal epithelium and the iris and choroid. Lecithin is assumed to be the most vitally necessary lipid. Relatively large amounts of free cholesterol are present in all the ocular tissues. Edna M. Reynolds.

Lebas, J., and Hubert, J. **The best stump for an ocular prothesis.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 15.

After cutting away the cornea and total evacuation of the contents of the globe, the authors insert a solid olive of glass or crystal 12 to 16 mm. in its long axis and 6 to 9 mm. in its short axis, suturing it within the scleral stump. Enophthalmos and the infraorbital groove constitute the two main hindrances to a cosmetic result. The enophthalmos may be remedied by wearing a fairly large prothesis which will widen the interpalpebral slit and wearing in front of it a concave lens. Both lenses should be decidedly curved in order to cause a strong reflex on the orbital region. Heavy xylonite spectacle frames will serve to completely mask the infraorbital groove.

J. B. Thomas.

Löhlein, Walter. **Nasal fundus ectasia in superior and inferior conus.**

Klin. M. f. Augenh., 1934, v. 93, Oct., p. 439. (Ill.)

A woman aged thirty-one years, myopic 20 D. with astigmatism of 1 D., presented an extensive staphylomatous ectasia at the nasal portion of the posterior polar region, superior and inferior conus, and inverse exit of the vessels toward the medial side. Straight lines appeared undulating and sight was impaired for six months, the scotomas observed two years previously having increased in size. As function gradually returned it was assumed that the stretched parts were less resistant to an infection from supramaxillary empyema and chronic tonsillitis.

C. Zimmermann.

McCullough, J. D. **Mucocele of ethmoidal and frontal sinuses.** Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 589.

There was proptosis of the right eye downward and outward for one-half inch. The eye movements were free in all directions. Drainage through the nose caused marked improvement. Later it was necessary to drain externally and the exophthalmos cleared up entirely. Beulah Cushman.

Nordland, M., and Larson, L. M. **Persistent and recurrent postoperative exophthalmos.** Amer. Jour Surgery, 1934, v. 23, Feb., p. 330.

In a certain number of exophthalmic goiter cases operated upon there is a recurrence of toxic symptoms, especially of exophthalmos. This may have been so slight before operation as to have been hardly noticeable, yet in from several months to two years after removal of large portions of the gland there is a definite progressive proptosis. This condition results from swelling of the extraocular muscles to from three to eight times their normal size. Removal of the roofs of the orbits through bilateral frontal bone flaps is recommended. (Six case reports.)

M. E. Marcove.

O'Connor, G. B., and Pierce, G. W. **Repair and restoration of the eye socket.** Arch. of Ophth., 1934, v. 12, Oct., pp. 493-499.

Six cases are briefly presented with photographs to show the functional improvement. The method consists of (1) excision of all scar tissue, (2) overcorrection of the existing defect by one-half, (3) immediate covering of the denuded areas by mucous membrane flaps or Ollier-Thiersch grafts, and (4) immediate and continuous distention of the newly-lined cavity by prosthesis made of dental modeling compound. The method of lining the lids by pedicle flaps from the lids is illustrated by drawings. J. Hewitt Judd.

Puscariu, H., and Lazarescu, D. **Severe osteomyelitis of both orbits with death.** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 531. (Ill.)

A girl of two years at first showed bilateral exophthalmos downward and to the temporal side, suggesting an affection starting from the ethmoidal region. This was confirmed by evacuation of pus at the operation, which revealed a communication with the ethmoidal sinuses. The infection, however, progressed to the orbital walls and supramaxillary bones, producing multiple staphylococcic abscesses. The purulent accumulation had penetrated the orbital walls and detached the dura mater from the bones of the anterior cranial fossa, displacing the brain, which itself was not invaded. The intraocular veins were enlarged and tortuous. Vision was almost abolished when the child died from exhaustion. C. Zimmermann.

14. EYELIDS AND LACRIMAL APPARATUS

Arruga, H. **Treatment of lacrimation by Toti's operation.** Boll. d'Ocul., 1933, v. 12, Oct., pp. 1045-1062.

The author describes and demonstrates by figures a modification of Toti's operation. He uses special trephines motivated by an electric motor, by which he perforates the bone and the nasal mucous membrane if present. He sutures the sac to the nasal mucosa when possible. (Bibliography and twenty-eight figures.)

M. Lombardo.

Brandes, G. **Anomaly of the lacrimal canaliculus.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 14.

The lower canaliculus had a thin epithelial covering and the tears did not pass, although a probe could be carried through to the lacrimal sac.

J. B. Thomas.

Busacca, A. **Transitory ptosis and permanent ptosis in trachoma.** Rev. Internat. du Trachome, 1934, v. 11, Oct., p. 204.

As a result of trachomatous disease of the upper fornix with extension to adjoining parts there is a disturbance of the motility of the upper lid. This disturbance has its origin in a dysfunction of the muscle of Müller and of the elevator of the upper lid. Mild degrees of ptosis may be attributed to increase in weight of the upper lid, while more marked ptoses are caused by lesions of the two muscles named. Instillation of cocaine and adrenalin may be used as a test for activity of Müller's muscle. When the inflammatory process is so severe as to cause partial or total destruction of Müller's muscle and of the distal portion of the elevator muscle there always remains after healing a permanent ptosis, depending in amount upon the number of muscle fibers destroyed. These paralyses should be classified with the paralyses of muscular origin. Phillips Thygeson.

Chow, K. V. **Entropion in the newborn and its treatment.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 830-832.

Entropion in an infant of one year was corrected by the Hotz entropion operation. Three cases previously observed in Europe are reviewed.

John C. Long.

Cunningham, E. R. **Cuénod and Nataf's modification of Saunders' operation for trichiasis and entropion.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 809-813.

The operative technique is given in detail with the author's modifications. This procedure consists in partial excision of skin and tarsus with an eversion brought about by suitable sutures. Numerous trachomatous cases have been successfully treated in this way.

John C. Long.

Esser, J. F. **Eyelid flaps.** Revue de Chirurgie Plastique, 1934, Jan., p. 295.

This is an operation devised to utilize a part of the upper eyelid to repair a defect in the lower lid. A triangular flap with the lid margin as a base is dissected in the upper lid. The triangle is incomplete on the lateral side to utilize a nutrient vessel. The flap is then turned through nearly 180 degrees so that the apex of the upper flap points downward. After the flap has healed, which takes from three to six weeks, the pedicle is cut and the remaining edges sutured. M. E. Marcove.

Fralick, F. B. **Acute dacryadenitis.** Amer. Jour. Ophth., 1935, v. 18, Jan., pp. 19-20.

Frieberg, T. **Widened palpebral fissure due to scar formation of upper eyelid.** Det oftalmologiske Selskab i Köbenhavn's Forhandlinger, 1933, pp. 25-26. In Hospitalstidende, 1934, Nov. 20.

A woman of twenty-five years had suffered ten years before from an abscess of the left upper lid which did not heal for six months. The lesion left extensive deformity of the skin, which adhered to the tarsus and made it narrower than before in the sagittal plane, thus causing a widening of the palpebral fissure. An incision was made 3 mm. above and parallel to the lid margin and the scar dissected loose from the tarsus. The upper part of the tarsus was then easily separated from the lower. The upper edge of the skin was fixed to the tarsus with sutures and a graft of mucous membrane from the lip was laid in the rift. Healing was by first intention and gave a perfect cosmetic result. D. L. Tilderquist.

Hambresin, L. **External tarsorrhaphy in the treatment of spontaneous entropion of the lower lid.** Bull. Soc. Belge d'Ophth., 1934, no. 68, p. 68.

In order to obtain permanent results the writer considers it necessary that the adhesions following tarsorrhaphy should occupy the entire thickness of the palpebral margins. After excision of the ciliary border at the outer canthus to the width of 4 or 5 mm. he freshens the entire thickness of the lid borders and unites them with two sutures. In discussion Weekers repeated his preference for alcohol injection in conjunction with canthotomy, and claimed that this treatment avoided the disfiguring effect of a narrowed palpebral fissure which followed Hambresin's method. J. B. Thomas.

Helmbold. **A clamp for bloodless removal of chalazia and small tumors of the lids.** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 530. (Ill.)

One branch has at the end a button which fits into the ring of the other branch and pushes the chalazion into the ring upon closure.

C. Zimmermann.

Hilgartner, H. L., and Hilgartner, H. L., Jr. **The use of copper ionization in the treatment of chronic stenosis of the lacrimal duct.** Amer. Jour. Ophth., 1935, v. 18, Jan., p. 54.

John, I. **Contribution to the inheritance of uncomplicated congenital blepharophimosis.** Graefe's Arch., 1934, v. 133, p. 60.

Blepharophimosis was present in the grandmother; in three daughters of the second generation, whereas one daughter and two sons were unaffected; in all the children (one son and three daughters) of an affected female of the second generation; and in the only offspring (a daughter) of each of two other affected females of the second generation; whereas each single offspring (a son) of an unaffected male and an unaffected female of the second generation was normal. This confirms the opinion of earlier writers that uncomplicated blepharophimosis is a dominant. H. B. Lamb.

Kraupa, Ernst. **Covering skin defects of the nasal side of the lower lid with a bridge flap from the nose.** Zeit. f. Augenh., 1934, v. 84, Oct., p. 216.

To avoid ectropion in plastic repair of the nasal end of the lower lid, Kraupa uses a bridge flap from the nose. The defect on the nose may be covered with Thiersch grafts.

F. Herbert Haessler.

Luo, T. H. **Bilateral congenital epicanthus inversus and ptosis.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 814-818.

Congenital epicanthus inversus associated with ptosis and superior rectus paresis occurred in a Chinese boy of nine years. There was no hereditary history. Epicanthus inversus differs from other types in that the fold extends from the lower lid in an arc to the medial end of the unaffected upper lid. This case showed improvement after a Hess operation followed by Elschnig's sutures and external canthoplasties.

J. C. Long.

Lyritzas, D. **A modification of the author's entropion operation.** Arch. f. Augenh., 1933, v. 108, Dec., p. 339.

The modified operation (described in the same journal in 1925) consists of three steps: (1) a linear incision through the tarsal conjunctiva, with excision of an elliptical piece of conjunctiva and tarsus in case the latter is greatly thickened; (2) excision of an elliptical piece of skin; (3) suture of the skin wound with interrupted sutures.

Dohrmann K. Pischel.

Mossa, G. **The etiology of chalazion.** Rassegna Ital. d'Ottal., 1934, v. 3, Sept.-Oct., p. 691.

The author reviews the various theories as to the causation of chalazion, and also the histologic and experimental work of others in this field. He studied twenty chalazia microscopically and chemically, and injected rabbits' lids with the latter and with secretion of the meibomian glands. He found the usual picture of giant cells, mononuclear and polynuclear leucocytes, fibroblasts, plasma cells, fat, and connective tissue. He concludes, from the presence of

notable quantites of fatty acids and saponaceous material, that chalazion is essentially the result of fatty degeneration of a granulomatous material. (Three illustrations.)

Eugene M. Blake.

Mügge. **The surgery of the lacrimal passages.** Klin. M. f. Augenh., 1934, v. 93, Oct., p. 501.

Referring to the article by Stock on a new lacrimal operation (see Amer. Jour. Ophth., 1934, v. 17, p. 672) Mügge says that it does not create a sufficient opening of the tear sac and that its results are less favorable than with well performed Toti operations.

C. Zimmermann.

Muirhead, W. M. **Carcinoma of the lacrimal sac.** Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 591.

A transitional carcinoma of the lacrimal sac was found after opening a fluctuant mass which had appeared after an injury a week earlier.

Beulah Cushman.

Pi, H. T. **Xerosis bacillus in chronic dacryocystitis.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 809-813.

A case of chronic dacryocystitis in a patient suffering from bacillary dysentery and vitamin-A deficiency is reported. Xerosis bacilli were found in large numbers in the conjunctival sac and in the contents of the lacrimal sac. A few pneumococci and Morax-Axenfeld bacilli were also present. Microscopic examination of the excised sac showed the proliferation and desquamation of the epithelium characteristic of vitamin-A deficiency in other ectodermal structures. John C. Long.

Reid, A. M. **Two cases of symblepharon with an account of a new operation for the treatment of this condition.** Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 592.

Similar to the tunnel made for freeing web fingers, in two cases the author made a tunnel along the line of the former fornix, and a one-eighth-inch rubber tube was sutured in place for fourteen to twenty-one days, until epithelialization had taken place. The web was then divided entirely, the maximum amount of tissue being left attached to the lids. The raw surface on the globe was covered by undercutting, and suturing the conjunctiva on each side. The results were most satisfactory.

Beulah Cushman.

Rubert, J. **Cysts as late sequels to trachoma of the lacrimal canaliculi.** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 653. (Ill.)

A woman of forty-six years had noticed seventeen years earlier at the nasal angle of the right lower lid a tumor which within the last two years had grown to the size of a bean. It extended into the orbit and was slightly fluctuant but upon pressure it did not become smaller and no fluid oozed into the nose or from the tear point. There were no inflammatory symptoms. The mass was an encapsulated cyst due to closure of both ends of the canaliculus, and containing a sterile yellowish fluid. After extirpation the wound healed by first intention. C. Zimmermann.

Taggart, H. J. **A modification of Motais's operation for ptosis.** Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 417.

The central third of the normal superior rectus muscle is isolated, detached from its scleral insertion, and reattached by suture to the lid margin between the anterior surface of the tarsus and the skin. The operation was successful in eight cases.

Beulah Cushman.

Van der Straeten, Appelmans, and Massa. **Symmetrical hypertrophy of the lacrimal and salivary glands. (Syndrome of Mikulicz.) Orbital lymphoma. Radiotherapy.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 71.

The patient, a woman aged seventy-three years, had presented the Mikulicz syndrome for an undetermined period. The left orbital lacrimal gland was particularly large. On the same side there rapidly supervened a direct progressive

exophthalmos, due apparently to a neoplasm deeper in the orbit. The diagnosis of orbital lymphoma was established by the rapidity of the exophthalmos, by simultaneous hypertrophy of the lacrimal and salivary glands, by microscopic examination of puncture fluid and blood, and by the excellent and rapid results of radiotherapy. The authors believe that the lymphoid infiltration of the left orbit was either propagated from the lacrimal gland through its capsule, or more probably by simultaneous hyperplasia of the adenoid tissue of the orbit. They comment especially on the favorable effect of radiotherapy in Mikulicz' disease. (Three illustrations, bibliography.)

J. B. Thomas.

15. TUMORS

Adson, A. W., and Benedict, W. L. **Hemangio-endothelioma of the orbit. Removal through transcranial approach.** Arch. of Ophth., 1934, v. 12, Oct., pp. 484-492.

In a girl aged twelve years a tumor about 5 by 3 cm. was removed from the retrobulbar space of the left orbit, the result being complete disappearance of the proptosis but a residual abducens paresis. A frontal osteoplastic flap was elevated and the roof and a portion of the lateral wall were removed. This exposure allows the extirpation to be done with greater ease and better control of bleeding than by the Krönlein operation. The steps in the operation are well shown by drawings. (Discussion.)

J. Hewitt Judd.

Aliquo-Mazzei, A. **Ocular complications of Recklinghausen's disease.** Lettura Oftalmologica, 1934, v. 11, Aug., p. 367.

After a careful review of the reported cases of this disease in which ocular complications were present, the author presents three cases of his own. A female aged thirty-five years showed abducens and facial paralysis on the right side, bilateral choked disc, and an acoustic irritation. Cranial decompression and examination confirmed the diagnosis of fibromatous tumor of the acoustic nerve in the cerebello-pontine angle. A female aged thirty years showed late left-sided facial paralysis and paralysis of ocular movements to the right. The patient was lost to further observation. In a female aged forty-three years a small chalazion-like tumor was present in the right upper lid just above the external canthus and a small hard nodule beneath the ocular conjunctiva a few millimeters above the limbus. Microscopic examination showed fibroma durum and with some reservation a diagnosis of neurofibroma.

F. M. Crage.

Bossalino, G. **An uncommon observation of malignant leiomyoma of ciliary body and iris.** Boll. d'Ocul., 1934, v. 13, March, pp. 332-348.

A woman of sixty-eight years showed in the lower nasal quadrant of the right iris a triangular yellowish-pink mass with its base at the ciliary border and its apex advancing the pupillary border 2 or 3 mm. The eye was enucleated and a section from the central part of the tumor showed that the mass extended from the ora serrata to the iris, and that it was a leiomyoma. The author thinks the tumor originated from the ciliary body. (Bibliography, nine figures.)

M. Lombardo.

Chiovenda, M., and Pagani, M. **Gliosis of the optic nerve.** Rassegna Ital. d'Ottal., 1934, v. 3, Sept.-Oct., p. 703.

In a boy of thirteen years the left eye had grown increasingly prominent for three years. Histologic study showed a tumor of cylinder axes without myelin sheaths, and typical astroglial elements collected into bundles irregularly crossed, with persistence of the normal stroma scaffolding of the optic nerve. The authors entitle this gliosis of the nerve, that is, a primitive, systemic, hyperplastic process in the glial elements. The case report is followed by critical discussion of the various types of glial hyperplasia, primary, secondary and mixed (glioma, gliomatosis, gliosis, infective glial sclerosis, and reparative glial sclerosis). (Fourteen illustrations.)

Eugene M. Blake.

De Walsche, L. **A case of melanosarcoma of the iris.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 93.

This brief case report includes a histological study of the enucleated eye illustrated by two photomicrographs.

Duc, C. **Concerning Leber's disease.** Rassegna Ital. d'Ottal., 1934, v. 3, Sept.-Oct., p. 739.

After briefly discussing the relation of heredity to ocular disease, and particularly to affections of the optic nerve, the author describes two cases showing many features suggesting Leber's disease. A woman of thirty-nine years had severe headaches, central scotoma, and menstrual disturbances, and became blind in eight months. All physical signs and laboratory tests were negative. The nine-year-old niece of the first patient also had headaches and primary optic atrophy, the final vision being 0.4. No other pathology could be demonstrated. The author raises the question whether these cases are of the type of hereditary optic atrophy or of retrobulbar neuritis, and whether these two are essentially the same disease. Eugene M. Blake.

Focosi, M. **Observations on an orbital neurinoma.** Boll. d'Ocul., 1933, v. 12, Oct., pp. 1063-1074.

A woman of forty-two years suffered for more than two years with intense headaches originating in the left orbit. Her blind left eye showed marked axial exophthalmos with normal mobility. At exenteration of the orbit an encapsulated tumor was removed which was found microscopically to be a neurinoma, and which did not originate from the optic nerve. (Bibliography, five figures.) M. Lombardo.

François, Jules. **Congenital and benign melanosis of the eye.** Arch. d'Opht., 1934, v. 51, Nov., p. 689.

A complete chronological résumé of all reported cases of this condition is given, with the addition of three recent personal observations. Color plates illustrate the plaques of scleral pigmentation. A discussion of the various tissues affected reveals a preference for the sclera and iris. The condition is unrelated to other congenital anomalies.

M. F. Weymann.

Jaffe, M. **Retinoblastoma. Report of a case with complete observations at autopsy.** Arch. of Ophth., 1934, v. 12, Sept., pp. 319-324.

The right eye of an otherwise normal colored girl, aged two years, was enucleated for a retinoblastoma which almost completely filled the vitreous chamber but did not extend into the optic nerve. Examination six months later showed a recurrence which filled the orbit and protruded between the lids. The left eye was normal. The right orbit was exenterated and radium applied. The general condition was very poor, with edema of scalp, forehead, and pharynx, a hard infiltrating mass in the mouth arising from the maxilla, enlargement of the liver, ascites, edema of the lower extremities, and marked anemia. Death occurred nine days later and necropsy revealed bronchopneumonia and metastases to the skull, scalp, lymph nodes, liver, ovary, and inferior maxilla. (Photomicrographs.)

J. Hewitt Judd.

Mazzi, L. **Bilateral symmetrical epibulbar epithelioma.** Arch. di Ottal., 1934, v. 41, June-Nov., p. 260.

The epitheliomata of both eyes were identical in appearance, color and histology. The etiology is discussed and the possibility of pinguecula and pterygia as causative factors is emphasized. There has been no recurrence for four years following surgical intervention.

Herman D. Scarney.

Orzalesi, F. **Primary basocellular epithelioma of the bulbar conjunctiva.** Boll. d'Ocul., 1933, v. 12, Oct., pp. 1098-1107.

A man of fifty-six years had noticed a reddish mass at the nasal side of the bulbar conjunctiva of the left eye, progressive in size. Examination of a specimen showed an epithelioma whose microscopic aspect the author describes in detail. The tumor was removed, and recovery was uneventful. (Bibliography.) M. Lombardo.

Rogers, R. M. **Xanthomatosis of the orbit (Lipogranuloma).** Amer. Jour. Ophth., 1934, v. 17, Dec., pp. 1141-1145.

Samuels, Bernard. **A study of the anatomic and clinical manifestations of necrosis in eighty-four cases of choroidal sarcomas.** Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 520.

The author reviews eighty-four cases of choroidal sarcoma with old and recent necrosis. No tissue of the globe was able to withstand the toxins. All the clinical signs were explained by the pathology. The chocolate-colored content of the anterior chamber was a clinical visible expression of necrosis in the iris and ciliary body, as blood and pigment granules escaped and became mixed in the aqueous. Chemosis of the conjunctiva and edema of the lids were signs of tenonitis. To the pain and vomiting of glaucoma was added the pain of scleritis. Appearing with great suddenness in an eye that has been blind for some time, these are the characteristic signs of necrotic sarcoma.

Beulah Cushman.

Weekers, L., and Lapière, S. **Treatment of angiomas of the lids by sclerosing injections.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 25.

Treatment of lid angiomas may lead to ectropion, and when the border of the lid is involved any slight loss of tissue may cause disfigurement. The authors review briefly the common methods including galvanocautery, carbon-dioxide snow, electrolysis, x-ray, and radium; and at greater length sclerosing injections, intravascular and paravascular. Three case histories are given, two of the patients infants, the result of paravascular injections being excellent in each case. The "scleroserum" (7.5 to 10 percent solution of double hydrochloride of quinine and urea) was injected three or four times at intervals of about three weeks, followed by moderate and short reactions. The simplicity of this treatment and the absence of scarring recommend it. Histologic study was made of a small section of an angioma of the lip excised seven days after a single injection of 7.5 percent "scleroserum". Incidentally this injection sufficed to effect a complete cure. Angiomatous tissue is fragile and vulnerable, with thin, simple endothelial tunics for the blood cavities and but little stroma. Clinical experience proves that the best results are obtained with weak sclerosing solutions.

J. B. Thomas.

16. INJURIES

Anderson, F. A. **Localization of intraocular foreign bodies by a modification of Holzknecht's method.** Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 492.

The author describes the Shrewsbury technique of making the film and interpreting the findings for localization of foreign bodies. It is to be recommended in the absence of the Sweet apparatus, and the camera is not expensive.

Beulah Cushman.

Brandes, F. **Total external ophthalmoplegia due to short circuit.** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 20.

The patient was struck in the right temple by a short circuit wire and at once lost consciousness. Upon regaining consciousness he complained of diplopia and violent pain in the right orbit. There was complete paralysis of all the extrinsic eye muscles. Within two months the muscles regained their normal power, but severe pain, especially at night, persisted for a month longer. The visual acuity remained normal. The author states that, although ocular lesions following electrocution are fairly frequent, paralysis of the motor eye muscles is extremely rare.

J. B. Thomas.

Chisholm, J. F., Jr. **A new use for the Elliot trephine handle.** Arch. of Ophth., 1934, v. 12, Oct., p. 580.

The author advocates the use of the trephine handle as the handle for a burr to be used for removing rust stains from the cornea. J. Hewitt Judd.

Cridland, A. B. **The Doyne Memorial lecture. Investigations on the "aftermath" of cases of intraocular foreign**

body. Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 438.

The outlook when intraocular foreign bodies come to rest anterior to the hyaloid membrane is comparatively good, with or without removal. When the foreign body is in the vitreous, is impacted in the posterior wall of the globe, or has passed completely through, the results vary a great deal. When the foreign body is posterior to the hyaloid membrane there is about an even chance of the eye becoming blind, alike after firm impaction or successful removal. The chance of a useful eye resulting is better in firm impaction and retention than in removal. The chance of obtaining a good eye is about three if the foreign body is successfully removed to two when the foreign body is left impacted. Beulah Cushman.

Giacomelli, G. **Corneal wounds with partial prolapse of the iris.** Boll. d'Ocul., 1934, v. 13, Jan., pp. 111-130.

The cornea of rabbits was perforated by the writer so as to secure prolapse of the iris. The eyes were then enucleated after intervals of hours or days and were fixed in formalin. Microscopic examination showed that the cicatrization process of the wound followed its usual course and was little disturbed by the presence of the iris if the prolapse was small. The iris was pushed backward little by little by the new-formed tissue, and participated, by proliferation of its own elements, only in the deepest part of the scar tissue, which became mixed with that coming from the endothelium. After the first stages of the process the chromatophores lost their pigment, of which only traces could be noted in the last phases of cicatrization. (Bibliography, eight figures.)
M. Lombardo.

Kleefeld, G. **Intraocular foreign body?** Bull. Soc. Belge d'Opht., 1934, no. 68, p. 9.

This is a report of slow loss of vision, and development of retinitis proliferans, in an eye injured by a small bit of steel ten years previously, the foreign body probably having traversed the globe. J. B. Thomas.

Lillie, W. I., and Adson, A. W. **Unilateral central and annular scotoma produced by callus from fracture extending into optic canal.** Report of two cases. Arch. of Ophth., 1934, v. 12, Oct., pp. 500-508.

In these two cases the retrobulbar neuritis syndrome developed four to six weeks after an injury and the immediate roentgenogram did not reveal a fracture involving the optic canal, but after visual defects developed the roentgenologic defects were found and attributed to the formation of callus during the interval. Operation was refused in the first case. In the second a decompression of the optic nerve from the orbit to the middle fossa was done, exposing a compression notch in the optic nerve. Earlier decompression is urged to avoid permanent injury to the nerve. (Illustrations, discussion.)
J. Hewitt Judd.

Swab, C. M. **Ocular lesions resulting from thallium acetate poisoning as determined by experimental research.** Arch. of Ophth., 1934, v. 12, Oct., pp. 547-561.

Experiments were conducted on rabbits, rats, and dogs to determine the effect of thallium on the visual apparatus. Thallium acetate was found to be a general protoplasmic poison, capable of producing either acute or chronic poisoning. All animals showed pathologic changes in every part of the visual pathway. The histologic changes were diffuse purulent conjunctivitis, keratitis, scleritis, iritis, cyclitis, and retinitis. The optic nerve showed neuritis and perineuritis. The occipital cortex presented meningeal hyperemia, satellitosis, and petechial hemorrhage. The lens was the only structure not affected. Massive round-cell infiltration was frequently found in the ciliary body, the retrobulbar connective tissue, and muscle tissue. (Photomicrographs and discussion.) J. Hewitt Judd.

Tooke, F. T. **Three unusual cases of foreign bodies in and about the eyeball.** Brit. Jour. Ophth., 1934, v. 18, Dec., p. 695.

Case one: Eight years prior to ob-

servation the patient had injured his right eye while striking a drain pipe with a hammer. The sight was lost immediately. The oculist consulted had the eye x-rayed and appreciating the character of the injury advised leaving it alone. Eight years later x-ray was negative, the lens was cataractous. In the lower filtration angle was a crescentric dark brown foreign body, 2 by 4 mm. A second picture showed no evidence of a metallic foreign body. The eye was negative to the giant magnet. Through a keratome incision a brittle piece of cinder or concrete was removed. The eye remained irritable and was subsequently enucleated.

Case two: The patient had noticed for three months a small lump over the right upper lid near the external angle. X-ray pictures showed a shadow at the margin of the frontal bone and extending backward toward the orbital apex. Dissection revealed two wooden splinters, 3.5 cm. long. Subsequent analysis indicated that they had been present three and a half years.

Case three: The left eye had annoyed at intervals for many years, without history of trauma. The eye was inflamed, the posterior surface of the cornea cloudy, and the iris swollen. Midway between pupil and filtration angle, slightly above the horizontal meridian, was a mass 1 by 2 mm., appearing melanotic to the slitlamp. X-ray localized a foreign body, but the magnet reaction was negative. On opening the anterior chamber and withdrawing the iris a small round pebble fell out. Only then did the patient remember an injury thirteen years previously.

D. F. Harbridge.

Villard, H., and Dejean, C. **Ophthalmia due to caterpillars.** Arch. d'Opht., 1934, v. 51, Oct., p. 625; and Nov., p. 719.

This article is concerned with the pathologic effect of tissue fluids and hairs of certain caterpillars upon the eye, as illustrated by nine case reports. The caterpillar most responsible for damage to eyes in France is a species which nests in pine trees. The hairs of this variety have a central tube which is supplied with a poison from glands in the skin and also present in the body juices. The pathological anatomy of eyes penetrated by these hairs shows the latter to be capable of setting up a typical foreign body reaction with the formation of tubercles. The literature is thoroughly reviewed and numerous illustrations show the minute anatomy of the caterpillar hairs and poison glands.

Experimental inoculation of rabbit eyes with the pine caterpillar provoked a severe conjunctivitis, after an incubation period of about fifteen minutes. Biopsies revealed a phase of acute lymphocytic inflammation, a succeeding phase of macrophage formation with fusion into giant cells, and healing by connective tissue formation. No nodules were formed, as the rabbit conjunctiva seemed to be able to throw off the hairs.

In the human the prognosis depends on the amount of toxin absorbed. Treatment is generous lavage and mechanical removal of all accessible hairs, with symptomatic therapy of the ensuing inflammation.

M. F. Weymann.

17. SYSTEMIC DISEASES AND PARASITES

Balod, K. **Anterior internal ophthalmomyiasis.** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 657. (Ill.)

At the University eye clinic of Riga a girl aged eleven years showed in the anterior chamber of her right eye the development of the larva, and the movements of its internal organs could be observed. It was removed with forceps through an incision with the lance keratome at the opposite limbus, with complete recovery and normal vision. The probable diagnosis was Wohlfartia (sarcophaga) magnifica.

C. Zimmermann.

Ch'uan-K'uei, H. and Chan, E. **Ocular syphilis.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 858-862.

Chancres of the eye constitute from three to five percent of all extragenital primary affections. Dark field examination is of great importance in its diag-

nosis. The importance of early antiluetic treatment in specific neuroretinitis and iritis is stressed. Choroiditis, keratitis, cyclitis, optic atrophy, gumma, tarsitis, ophthalmoplegia and other luetic manifestations are discussed. Ocular disease is a more frequent sign of congenital lues than a positive Wassermann reaction. John C. Long.

Feng, H. H. **Cysticercus cellulosae subconjunctivalis.** Chinese Med. Jour., 1934, v. 48, Sept., pp. 863-868.

A case of subconjunctival cysticercus of Taenia solium in a Chinese boy is reported with photomicrographs. This is the first case of cysticercus noted in 33,000 eye cases at the Peiping Union Medical College. John C. Long.

Ford, Rosa. **Recovery from strabismus amblyopia after twenty-nine years, by continuous drainage of the nasal accessory sinuses.** Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 507.

A defect of vision with strabismus had been present for twenty-nine years. Visual field studies demonstrate disappearance of a wedge-shaped defect extending upward from the point of fixation. The improvement in vision was proportionate to the amount of drainage from the nasal sinuses.

Beulah Cushman.

Kambai, G. **Must the ophthalmologist master rhinoscopy, and is it necessary in ophthalmology?** Sovietskii Viestnik Opht., 1934, v. 5, pt. 2, p. 123.

The author feels that knowledge of rhinoscopy is indispensable to accurate diagnosis and treatment of lesions of the lacrimal apparatus, and he urges that eye clinics be equipped with facilities for rhinoscopy. Ray K. Daily.

Maas, A., and Holzman, B. **Specific diagnosis and therapy of tuberculous ocular lesions.** Sovietskii Viestnik Opht., 1934, v. 5, pt. 2, p. 115.

The author demonstrates with reports of cases that only focal reactions are diagnostic of ocular tuberculosis, and that treatment with focal reactions is more effective. Mild focal reactions he considers as not menacing the eye.

Ray K. Daily.

McGarvey, W. E. **Oculoglandular tularemia.** Jour. Michigan State Med. Soc. 1934, v. 33, June, p. 304.

Two cases of tularemia had the same source of infection but very different clinical manifestations. One showed extensive glandular involvement, including the lacrimal gland, together with conjunctival ulcers and corneal maculae. The other showed no glandular involvement and much less pronounced ocular symptoms.

Edna M. Reynolds.

Sanguinetti, C. **Vaccinia of the eye.** Lettura Oft., 1934, v. 11, Aug., p. 412.

Vaccinia of the eyelid was seen in two patients, one a female aged fifty-two years and the other a male aged twenty-eight years, The former, a shepherdess, had slept with a niece who had been successfully vaccinated very recently. The male, a shepherd, had slept with his young son, who had also been successfully vaccinated very recently. In this case the lesion was a large umbilicated pustule of the right upper lid. The other case presented a similar pustular lesion with depressed center and crust, at the outer canthus of the left eye. In his differential diagnosis the author describes the main features of three other diseases with which vaccinia may be confused, namely: malignant pustule, chancre, and ulcer of tertiary lues. F. M. Crage.

Stobie, W., and MacCallan, A. F. **Discussion on the constitutional factor in diseases of the eye.** Trans. Ophth. Soc. United Kingdom, 1933, v. 53, p. 421.

The first author covers phlyctenular disease, iridocyclitis, retrobulbar neuritis, and the vascular diseases. The second author discusses the foci of infection. Beulah Cushman.

Tristaino, L. **Oculocardiac reflex in general progressive paralysis and tabes dorsalis.** Lettura Oft., 1934, v. 11, Oct., p. 501.

The behavior of this reflex was the basis for study in thirty-nine cases of

general progressive paralysis and in four cases of tabes dorsalis. In the former the reflex was abolished with greatest frequency in the early cases, whereas it became normal, exaggerated normal, or inverted as the cases became more inveterate. The Argyll Robertson pupil was rarely absent. In the tabetics both reflexes were absent in half the cases. Every case showed a positive Wassermann in the blood or spinal fluid or both. F. M. Crage.

Vele, M. **Capillaroscopy of perilimbal vessels in affections of the circulatory apparatus.** Boll. d'Ocul., 1933, v. 12, Oct., pp. 1114-1134.

The writer examined at the slitlamp the capillaries of the limbus in thirty-one patients affected by chronic myocarditis or endocarditis, mitral or aortic insufficiency, aortitis, cardiac asthma, arteriosclerosis, or chronic nephritis. She describes the biomicroscopic aspect of capillary loops of each disease, the caliber of the arteries, their pulsation, varicosities of veins, the amount of their content, and perivascular hemorrhages where present. (Bibliography.) M. Lombardo.

Wegner, W. **Experimental hematogenous "isolated" tuberculosis of the eye.** Arch. f. Augenh., 1933, v. 108, Dec., p. 280.

Tuberculosis of the eye achieved by injecting bacteria into the blood stream includes marked generalized as well as some ocular tuberculosis. Wegner's device for causing localized infection in the eye consists in injecting a suspension of tubercle bacilli into an anterior ciliary vein, previously tied off. The operative technique, given in detail, appears surprisingly easy.

In a rabbit's eye such injection causes severe proliferative or exudative iritis, cyclitis, choroiditis, vitreous opacities, or retinal detachment. After the injection of 0.01 to 0.5 mg. of the bovine type of tubercle bacilli, the eye may show a reaction as early as four days, but sometimes not until fourteen days, after the injection. Choroidal and iris foci appear and start to show signs of healing within a few days. The cornea is usually involved fourteen to sixteen days after injection, the first stage being a diffuse clouding of the endothelium, followed by swelling of the stroma and superficial pannus formation.

The reactions after injections of 1.0 to 0.1 mg. of bacilli of the human type into the anterior ciliary veins were much milder. As the animals were kept alive for over ten months, late results could be observed. In an eye in which a choroidal focus had apparently healed there would suddenly appear a neighboring group of new choroidal foci. The cornea was involved later than with the bovine type, and showed a marked tendency to clear up entirely in time. No eyes were lost even after a period of ten months, and one had apparently healed after a period of three months. Recurrent inflammation seemed to arise from bacilli released from apparently healed foci and not from a new blood infection. Dohrmann K. Pischel.

Wright, R. E. **Adult filaria (wuchereria) bancrofti in the anterior chamber.** Brit. Jour. Ophth., 1934, v. 18, Nov., p. 646.

The author discusses the several types of filarial worm observed in various sections of India. A male aged twenty-five years presented evidence of iritis with a fine exudate on the pupillary border and a flocculent deposit at the bottom of the anterior chamber. Two rounded hemorrhages were observed near the disc. During the succeeding twelve days a filarial worm was seen in the anterior chamber, easily visible because of its rapid movements and a fluorescent sheen. The patient did not give a history of filarial fever or swellings, nor were microfilariae present in the night blood. A small keratome incision was made in the cornea, the instrument being withdrawn quickly without loss of aqueous. In the fraction of a second which this operation required the worm disappeared. About two hours later it was found in a fold of the black mask. The worm was placed in a warm saline solution with some fresh human serum, but by morning it was dead. The patient had vision of 6/6 when discharged.

D. F. Harbridge.

18. HYGIENE, SOCIOLOGY, EDUCATION, AND HISTORY

Archangelskii, B. H. **Cataloguing pathologic specimens.** Sovietskii Viestnik Opht., 1934, v. 5, pt. 2, p. 134.

The author urges the use of the card index system with one classification according to diseases. Such a classification would permit prompt access to all the pathologic material of a disease, and eliminate the necessity of searching through laboratory books, where the material is registered in the order in which it is received. Ray K. Daily.

Archangelskii, B. H. **Remarks on the article of Levkoeva "On the establishment of a pathological museum in ophthalmic institutions."** Sovietskii Viestnik Opht., 1934, v. 5, pt. 2, p. 133.

The author takes issue with Levkoeva as to a macropathologic museum having to be developed at the expense of a museum of microscopy. The author maintains that half of an eyeball should be preserved for macropathology and the other half sectioned for microscopic study. Ray K. Daily.

Boroviev, I. **Industrial employment of the blind.** Sovietskii Viestnik Opht., 1934, v. 5, pt. 2, p. 126.

The utilization of the industrial productive abilities of the blind is very desirable in times of labor shortage. A study of eighteen blind working in the industrial center of Perm shows that in many jobs the industrial productivity of the blind may equal that of the seeing. Work for the blind should not require complicated motions, or movements about the place. Their sphere of usefulness should increase with a study of their occupational achievements.
Ray K. Daily.

Bullock, C. F. **A blind man's kennels.** Outlook for the Blind, 1934, v. 28, Oct., p. 165.

The author gives an accurate and painstaking account of the building, operating expenses, and management of his kennels. Edna M. Reynolds.

Clunk, J. F. **Canadian system of operating stands for blind persons.** Outlook for the Blind, 1934, v. 28, Oct., p. 171.

Details of management of a series of concession stands operated by the Canadian National Institute for the Blind are given.
Edna M. Reynolds.

Halfacre, D. F. **Prevocational work in classes for the blind.** Outlook for the Blind, 1934, v. 28, Oct., p. 151.

A somewhat detailed description of the manual crafts which can be taught to blind children in the elementary grades is given. Edna M. Reynolds.

Koller, C. **Preliminary report on local anesthesia of the eye.** Arch. of Ophth., 1934, v. 12, Oct., pp. 473-474.

This is a translation of the original article presented before the German Ophthalmological Society on September 15, 1884, in which Koller reported the production of local anesthesia and dilatation of the pupil following instillation of a two percent solution of cocaine in animal eyes, and then in his own and those of a colleague.
J. Hewitt Judd.

Levkoeva, E. **The organization of pathological museums in ophthalmic institutions.** Sovietskii Viestnik Opht., 1934, v. 5, pt. 2, p. 131.

The author emphasizes the value of macropathologic specimens and calls attention to the fact that the Helmholz eye hospital in Moscow contains 3,500 specimens, which are available to any Soviet physician interested in the study of ophthalmologic problems. Macroscopic specimens, however, have to be prepared at the expense of microscopic specimens. Ray K. Daily.

MacCallan, A. F. **Trachoma in the British Colonial Empire. Its relation to blindness; the existing means of relief; means of prophylaxis.** Brit. Jour. Ophth., 1934, v. 18, Nov., p. 626; and Revue Internat. du Trachome, 1934, v. 11, Oct., p. 173.

In some distant possessions diseases such as plague, cholera, malaria, and ankylostomiasis engage the whole at-

tention and financial resources of the public health administrations; beside which a special knowledge of eye diseases cannot be expected of the ordinary competent colonial medical officer; so that in some places trachoma is underestimated or neglected.

The one method which can and should be applied to all countries is treatment in the schools. A valuable though incomplete effect can be produced from instillation of drops by the school teacher, since recognition of ordinary cases is not difficult.

D. F. Harbridge.

Marin Amat, M. **Trachoma and the school.** Rev. Internat. du Trachome, 1934, v. 11, Oct., p. 217.

Marin Amat states that for a campaign against trachoma to be really effective those individuals who are in the relative isolation of the home must be considered as well as those who can be reached in schools, asylums, factories, and so on. While the school is one of the principal mediums for spread of the disease it can also be made one of the principal means of controlling it. It is the place where infected individuals may be treated and where eye hygiene may be taught. The author outlines in detail a program of prophylaxis and treatment. Phillips Thygeson.

Maw, J. F. **Sculpture for the sightless student.** Outlook for the Blind, 1934, v. 28, Oct., p. 156.

The methods of teaching sculpture to blind students which are followed by Pietro Montana of New York are summarized briefly, with a statement of the advantages to be gained from such study. Edna M. Reynolds.

Morax, V. **The antitrachomatous dispensary at Gabès.** Rev. Internat. du Trachome, 1934, v. 11, Oct., p. 214.

Morax describes in detail the method of treatment employed at the antitrachomatous dispensary at Gabès, which is one of several model dispensaries established by Talbot in the oases of southern Tunisia. The treatment of florid trachoma is partly surgical, usually grattage, and partly medical. Copper salts are employed either in the form of collyria or as ointments. Because of the difficulty in obtaining sufficient funds for purchase in France of the medications, necessarily supplied free of charge to the natives, Morax recommends the establishment of a pharmaceutical center in Tunis where the required products can be prepared.

Phillips Thygeson.

Orlova, A., and Polak, B. **Relation of accidents to the condition of the visual organs of chauffeurs.** Sovietskii Viestnik Opht., 1934, v. 4, pt. 6, p. 582.

Because the visual requirements for chauffeurs eliminate eighteen percent of the applicants, the authors studied 888 efficiency histories of chauffeurs to determine whether the high visual requirements were really justified. The number of chauffeurs with vision below the government requirements contained no greater percentage of poor drivers than the qualified list. The same applies to color-blind chauffeurs, who apparently found other means of guidance to compensate for color blindness. The percentage of accidents was twice as large in chauffeurs with epiphora as in chauffeurs free from it. Latent strabismus was found equally common among good and bad chauffeurs. The authors feel that these findings indicate that the visual requirements should be lowered. They suggest 1 as the sum of visual acuity of both eyes, with the weaker eye not less than 0.4, corrected with glasses. The higher requirements without correction should be held for drivers of busses and ambulances. To enable color-blind people to drive with safety the authors suggest that geometric signs should be substituted for color signals. Ray K. Daily.

Pagès. **Campaign against trachoma in Morocco during the year 1933.** Rev. Internat. du Trachome, 1934, v. 11, Oct., p. 222.

Pagès reviews the trachoma situation in Morocco. In 1933, 30,722 cases of trachoma were reported from the seven largest cities. It is the major eye disease of the country and creates most of

the blindness. The author regards trachoma in its early stages as a curable disease, particularly if treatment can be continued for sufficient time. The Bureau of Public Health and Hygiene in 1933 issued an illustrated pamphlet, with Arabic translation, containing the essential facts on trachoma, for public distribution. Phillips Thygeson.

Ramsay, A. M., **William Mackenzie, M.D., founder of the Glasgow Eye Infirmary, and the first lecturer on diseases of the eye in the University of Glasgow.** Glasgow Med. Jour., v. 4, Sept., p. 89.

The history of medicine and ophthalmology from 1500 B.C. to the eighteenth century is outlined and a biographic sketch of Mackenzie is given. Although always busily engaged in general practice, Mackenzie identified himself with the study of diseases of the eye and came to be regarded as the leading oculist of his time.

Edna M. Reynolds.

Savvaitov, A. **Ocular contraindications to occupation as chauffeur.** Sovietskii Viestnik Opht., 1934, v. 4, pt. 6, p. 573.

The author's investigations rate as ideal the requirements in force for chauffeurs in Moscow. Without correction the sum of the visual acuity of both eyes must be not less than 1.3, that of the poorer eye not less than 0.4. After three years experience the sum of the visual acuity may be reduced to 1, experience compensating for the reduction; but 0.4 for the weaker eye is still required, so that in case of injury to the better eye the poorer eye will enable the driver to reach the nearest garage safely. Any contraction of the visual field, any degree of color blindness, diplopia, disturbance in binocular vision, strabismus, persistent epiphora, nystagmus, limitation of ocular movement in any direction, chronic blepharitis or conjunctivitis, and progressive ocular disease even with normal visual acuity are considered as contraindications for this occupation. Drivers of government machines are not permitted to wear glasses. Reexaminations are made every two years, as well as after illness or accident. Ray K. Daily.

Ten Doesschate, G. **Concerning the history of the visual field.** Arch. f. Augenh., 1933, v. 108, Dec., p. 317.

From the first mention of the visual field by Euclid in 300 B.C., the author traces the changing conceptions of the shape and size of the visual field up to the modern viewpoint. The idea of a ninety-degree circular field persisted up until about 1567. The actual size was not determined until Thomas Young accurately measured it in 1807. Purkinje described a perimeter in 1825, and noted that the color fields were of different sizes. In 1857 Aubert and Foerster accurately measured the color fields and started quantitative perimetry. About the same time Donders mentioned taking a field by confrontation. He also determined that the blind spot was the size of the optic disc.

Dohrmann K. Pischel.

19. ANATOMY AND EMBRYOLOGY

Busacca, Archimede. **The normal limbus region in slitlamp microscopy and histologic preparations.** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 634. (Ill.)

Busacca gives an elaborate account of the anatomy of the limbus region, with colored plates.

C. Zimmermann.

Cordero, C. **Concerning the effects of so-called double vital staining (pyrol blue and lithium carmine) of the ocular globe. (Reticulo-endothelial system of the eye.)** Arch. di Ottal., 1934, v. 41, June-Nov., p. 241.

Other work on the reticulo-endothelial system is reviewed by the author, who studied in rabbits the selectivity of the cells of this system in the eye. Lithium carmine and pyrol blue were injected into the anterior chamber. The eyes were fixed and examined histologically and three distinct cellular elements noted; namely, pyrolophilic, carminophilic, and carmino-pyrolophilic cells. An absolute difference of form and structure of carminophylic and pyrolophilic cells in the cornea, iris

or ciliary processes could not be made out. However, in the cornea the carminophilic elements appeared smaller, thinner, and longer than the pyrolophilic cells. (Colored plate, bibliography.) Herman D. Scarney.

Folk, M. L. **Histopathology of coloboma of the choroid and optic-nerve entrance.** Amer. Jour. Ophth., 1934, v. 17, Dec., pp. 1126-1129.

Handmann, M. **Anatomic, physiologic and clinical differences between the upper and lower halves of the eyeball.** Klin. M. f. Augenh., 1934, v. 93, Nov., p. 609.

Handmann enumerates in abridged form the regional differences between the upper and lower halves of the eyeball, as regards the individual parts from conjunctiva to retina and optic nerve. C. Zimmermann.

Sala, G. **Depth of the anterior chamber in relation to age and refraction.** Boll. d'Ocul., 1933, v. 12, Nov., pp. 1317-1327.

In a study by slitlamp the variations of the depth of the anterior chamber in twenty-five emmetropic, fifty hyperopic, and fifty myopic subjects, during the first six decades, are shown in several diagrams. The lowest values are associated with hyperopia, the highest with myopia, the proportion varying in different decades. The depth is affected also by the size of the lens, which increases from the first to the fourth decade, is stationary from forty to fifty, and increases again from fifty to sixty years. (Bibliography.)

M. Lombardo.

Uyama, Y., and Miyake, T. **Further communication on extension of neurofibrillae into the retina.** Graefe's Arch., 1934, v. 133, p. 157.

On the fourteenth day of incubation, the nervous spongioblasts in chickens are well developed. They lie in the outer zone of the inner plexiform layer, and show several horizontally extending processes and an axis cylinder. The first-named form an extensive network in the horizontal plane, while the latter extend immediately from the cell body or from the root of the process through the inner plexiform layer to the nerve-fiber layer. Other highly technical details are set forth. H. D. Lamb.

NEWS ITEMS

Edited by Dr. H. Rommel Hildreth, 640 S. Kingshighway, St. Louis

News items should reach the Editor by the twelfth of the month.

Deaths

Dr. Ira Hugh Dillon, Topeka, Kan., aged 61 years, died Nov. 16, 1934, of coronary thrombosis.

Dr. Mellard Fillmore Jarrett, Fort Scott, Kan., died Nov. 21, 1934, aged 77 years.

Dr. Allyn Bernard Maise, Shreveport, La., died Dec. 23, 1934, aged 57 years, of pneumonia.

Dr. Thomas Donald Kechich, Gary, Ind., died Jan. 9, 1935, aged 36 years, of pneumonia.

Miscellaneous

Dr. Arnold Knapp spoke at the January meeting of the Chicago Ophthalmological Society. His subject was "The present European trend in operations for the detachment of the retina."

At a recent meeting of the Medical Board of the Brooklyn Eye and Ear Hospital, Dr. John H. Ohly was elected President for the current year.

The Brooklyn Jewish Hospital, in tending a dinner to members of its staff who have served the hospital for twenty-five years, has done honor to their ophthalmologist, Dr. Isaac D. Kruskal. Dr. Kruskal is well known in local ophthalmological circles and has earned the respect not only of his own group, but that of every ophthalmologist in Brooklyn.

Professor Doctor Karl D. Lindner of Vienna will arrive in America early in March and will give a number of courses; the main subject will be detachment of the retina. He will appear in San Francisco, Denver, St. Louis, Chicago, Philadelphia, New York, and Boston. Anyone desiring to communicate with him, may address him in care of Doctor Hans Barkan, Stanford University Hospital, San Francisco, California.

Miss Pauline Brooks Williamson has become a member of the Board of Directors of the National Society for the Prevention of Blindness. Miss Williamson is Chief of the School Health Section, Welfare Division, Metropolitan Life Insurance Company.

Societies

Dr. P. Chalmers Jameson was recently elected President of the New York Ophthalmological Society. This organization is almost 75 years old, and has numbered among its members the greatest ophthalmological minds in the metropolitan area.

Dr. William H. Crisp was the guest of the Omaha-Council Bluffs Medical Society, on January 16, 1935. He discussed, "Refinements in refraction."

The Dallas Academy of Ophthalmology and Otolaryngology dispensed with their February meeting and acted as host to the Mid-Western Section Meeting of the Triological Society on January 28 and 29. Dr. John O. McReynolds presided on the first day and Dr. E. H. Gary presided on the next day.

The International Council of Ophthalmology recently decided to hold the next International Congress of Ophthalmology in the second week of December, 1937. The Congress will meet at Cairo, Egypt.

The following program was given at a meeting of the Eye Section of the Philadelphia County Medical Society held February 7, 1935: Traumatic dislocation of lens with unusual features, by Dr. Henry O. Sloane; Anomalies of the pupil in diseases of the central nervous system, by Dr. Ernest Spiegel.

The Annual meeting of the Ophthalmological Society of Egypt will take place at the Memorial Ophthalmic Laboratory, Giza, March 22, 1935.

The Louisville Eye and Ear Society had its annual meeting at the Brown Hotel, January 10, 1935. The guest speaker, Dr. Harvey J. Howard of St. Louis, spoke on "The modern practice of medicine by the ophthalmologist." After his address he related some of his experiences in China.

Personals

The Klinische Monatsblätter für Augenheilkunde for January, 1935, contains a personal note of congratulation to Professor Adolph Barkan on reaching his ninetieth birthday. Dr. Barkan is at present living in Munich. He is probably the oldest living ophthalmologist.

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